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Papers presented at the Nashville Conference on Research Related to College Admissions and one presented at the Lexington Conference on Institutional Research; both conferences were cosponsored by the Southern Regional Education Board during 1962.

Emphasis was placed on research that would aid different kinds of institutions to develop more effective admissions and guidance procedures. Topics include: administrative and research perspectives in college admissions, concomitants of increasing selectivity in the admission process, assessment of academic potential, college environments and student selection, research related to the admission of transfer students, college environments and student selection, conditional admissions, and measuring the success of a college.

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RESEARCH RELATED TO COLLEGE ADMISSIONS

ED000905

SREB

RESEARCH
RELATED TO COLLEGE ADMISSIONS

Edited by
Kenneth M. Wilson

SOUTHERN REGIONAL EDUCATION BOARD
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Atlanta 13, Georgia
1963

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a grant from the Carnegie Corporation

FOREWORD

The Southern Regional Education Board has a continuing interest in promoting the systematic study of problems related to the management, operation, and improvement of higher institutions in the South. This interest has been reflected in SREB sponsorship of several regional institutes or conferences on institutional research -- studies of the college faculty, studies of student characteristics, space-utilization studies, budgetary analyses, etc. Of these activities, the Swannanoa Conference, held at Warren Wilson College, Swannanoa, North Carolina, in 1961 was the first to be concerned exclusively with research on college students and the college environment. Proceedings of the Swannanoa Conference were published by the Board in 1962, in a volume entitled Institutional Research on College Students.

In a diversified system of higher education, such as we have in our region and nation, no one pattern can be established for college admissions. The Commission on Goals for Higher Education in the South, for example, has emphasized this fact by noting (a) that many different kinds of institutions and educational programs are needed in order to reach the goal of full educational opportunity, and (b) that admissions standards for each institution must be geared to its purpose.

The papers in this volume suggest ways in which research can help our different kinds of institutions develop more effective admissions and guidance procedures. Included are papers presented at the Nashville Conference on Research Related to College Admissions and one paper presented at the Lexington Conference on Institutional Research, both of which were co-sponsored by the Board during 1962.

Winfred L. Godwin
Director
Scuthern Regional Education Board

INTRODUCTION

Kenneth M. Wilson
Southern Regional Education Board

Almost half the nation's high school graduates now enter college, according to recent estimates (Bridgman, 1960),[1] and it is probable that even higher proportions of graduating groups in future years will want to continue their education. A recent national survey (Roper, 1959) revealed that almost 70 per cent of children under the age of 18 years were expected by their parents to attend college. While the behavior of children does not always conform to parental expectation, such evidence suggests that "going to college" has come to be thought of as a reasonable, proper, and desirable goal for a very substantial majority of the nation's youth.

Rising levels of educational aspiration in the population, rising family income levels, the nation's widely heralded need for more college trained individuals (plus programs of recruitment and financial support designed to encourage college attendance), superimposed on the expected increase in the size of the age-group from which a majority of new college students traditionally have been drawn (18-21 years), combine to account for projected sharp increases in college enrollments during the present decade (Southern Regional Education Board, 1963).

One of the most significant consequences of an unprecedented demand for higher education, the full impact of which is still prospective, has been greatly increased pressure on states, governing boards, and college administrators for decisions bearing on enrollments, "standards," and admissions policies. The questions, "Who should go to college?" and "What kinds of 'colleges' should they attend?", of perennial concern in the field of higher education, are being asked with increasing frequency and urgency. And, in the nature of things, operational answers to these questions are being effected -- in decisions to expand, or not to expand existing facilities; to develop, or not to develop, new institutions, programs, or curricula to meet increasingly diverse student abilities and needs; to adopt new, perhaps more selective, admissions policies or to continue to follow current practices and policies.

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[1] Throughout this volume parenthetical notation is used in citing references listed at the end of each paper.

Whether considered from the viewpoint of a particular college or university, a state system of higher education, or higher education as a whole, all such decisions have serious implications; they help determine who will be educated beyond the high school as well as the quality of educational programs available. Because they go directly to the heart of the problem posed by increased demand for higher education and because they have the most obvious implications for individuals and society, decisions regarding admissions are particularly crucial.

There is much evidence that the situation with respect to college admissions is changing rapidly throughout the nation, and due to a variety of pressures, decisions affecting admissions are sometimes made under conditions not conducive to informed deliberation. The Commission on Research and Service of the Southern Association of Colleges and Secondary Schools (1962), for example, after a recent survey of member colleges and universities, reported that decisions affecting admissions often are being made without comprehensive institutional planning, the present trend being to ". . . accommodate policies to pressures as far as possible, and then draw the line." Those responsible for decision-making, in the words of the Commission, "should not allow themselves to be swayed willy-nilly by academic or economic forces which may or may not have logical meaning for the situation." Rather, it is imperative that they begin now, before the pressures of projected enrollment increases have been realized fully, to consider formally the alternative courses of action which are possible and to collect the evidence necessary to an informed assessment of the probable consequences of each alternative -- to the individuals involved, to the institution or groups of institutions affected and to society.

The Nashville Conference

The Nashville Conference on Research Related to College Admissions was designed to promote this objective by providing, for administrative and faculty representatives of colleges and universities of the South,[2] an opportunity (a) to hear and discuss a variety of viewpoints regarding current trends in college admissions and the factors which should be taken into account in the development of admissions policies, with primary emphasis generally on the role of research in the formulation, implementation, and evaluation of admissions policies; (b) to examine selected, researchable problems related to admissions; and (c) to discuss reports of current research with a view to assessing implications for their own programs of institutional research.

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[2] The South is defined in terms of the sixteen states which are parties to the Southern Regional Education Board Compact, as follows: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Held at Vanderbilt University,[3] Nashville, Tennessee, August 6-10, 1962, under the sponsorship of the Southern Regional Education Board, the Conference was attended by admissions officers, registrars, academic deans, some college presidents and faculty representatives, and representatives of agencies concerned with college admissions or with higher education generally (see Appendix). Those attending the Conference participated in a varied program consisting of lectures and addresses, planned as well as informal opportunities for discussion, and opportunities for the exchange of ideas and information regarding developments related to admissions on the campuses represented.

The Conference program was designed to point up the research implications inherent in certain projected, admissions-related developments in higher education, which may be stated in the form of basic premises or propositions, as follows:

1) As higher education grows larger it will inevitably become more complex. There will be increasing emphasis on the differentiation of institutional roles and functions in higher education. Problems related to the selection, classification, and guidance of students -- in effecting an appropriate distribution of students among types of institutions and among programs within institutions -- will require much more systematic attention than they have received in the past.

2) There will be increasing emphasis on selectivity in the admissions process, with the degree of selectivity a function of institutional control, objectives, resources, and philosophy. For some institutions the average "academic quality" of admitted classes may be increased dramatically, both as a consequence of increased selectivity and as a consequence of general improvement of high school preparation.

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[3] All concerned with the Conference are indebted to the host institution for making its resources available. Particular thanks are due Dr. William O. Batts, Jr., University Registrar, Vanderbilt University, for his assistance in planning and conducting the Conference.

3) Alternatives to simple "accept-reject" approaches to the admissions process will be explored by many institutions -- formal "on-trial" periods, pre-admissions courses and counseling, etc.

4) There will be increased use by institutions of standard college entrance examinations in the admissions process; more states are likely to introduce system-wide test requirements for publicly controlled institutions. Problems of interpreting scholastic aptitude test results, along with other factors -- personal or social -- thought to be relevant to the assessment of an individual's academic promise, will assume much greater significance than in the past.

5) Problems related to the inter-institutional mobility of students are likely to increase, particularly with the growth of junior colleges in size and number. As compared to the amount of research on problems related to the admission of first-time college students, that related to the admission of transfer students has been negligible. These problems will assume greater importance and will command an increasing amount of attention in the years ahead.

Research Related to College Admissions

The papers which comprise this volume, all but one of which were prepared for presentation at the Nashville Conference, reflect major topical emphases in the program, growing out of the considerations mentioned earlier. These topics, of course, represent only a sampling of those which have been selected in the development of a program on the general theme of "research related to college admissions" -- a rather large and complex research domain.

Administrative and Research Perspectives

Papers by Robb, Webster, and Wing provide, respectively, a general review and analysis of factors involved in the assessment of admissions policies and practices; a critical examination of some of the problems involved in the conduct, in educational settings, of basic or applied social research, with particular emphasis on administrative and technical problems involved in the study of educational growth in college students; and, a proposed model for institutional selection predicated on the development of explicit statements of the desired components of a college student body.[4] All papers point up the need for more explicit conceptualization of institutional purposes and functions if admissions practices are to be improved.

Concomitants of Increasing Selectivity

Ways in which a college may be affected as standards for admission are increased -- resulting in sometimes dramatic increases in the level of developed ability of entering classes over a period of time -- are suggested by descriptions and analyses of experiences at three institutions -- The University of Rochester, Emory University, and Harvard College (papers by Cole, Webb and Whitla, respectively).

Increased academic "maturity" in the student body; increased competitiveness; curricular modifications and advanced placement in recognition of increased levels of student preparation; problems related to faculty "grading standards"; problems, both social and psychological, growing out of heightened competition and student efforts to excel academically -- these and other concomitants of increased selectivity have been observed. As the character of the student body changes in *known* respects, an institution must be alert to a variety of side-effects and take steps to meet the problems anticipated.

Assessing Academic Potential

A variety of information is normally available regarding the attributes of applicants for admission to a college (or, of admitted students) -- scores on tests of verbal and mathematical aptitude, a high school transcript, an index of rank-in-class or a grade-average, recommendations of principals and counselors, possibly ratings of individuals based on interviews prior to or after admission, etc. From this information, admissions officers or others concerned with students form judgments regarding the "academic potential" of an individual (or infer differences in degree of academic potential among several individuals). These judgments may be used as bases for accepting or rejecting applicants for admission or they may be part of a process of placement and guidance which requires valid information about the achievement and capacities of individual students.

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[4] In papers not available for inclusion in this volume, the problem of developing adequate techniques for assessing the personal and social qualities of college students which are most relevant for institutional selection and guidance was dealt with by J. A. Davis, Educational Testing Service, and S. A. Kendrick, Vice President, Research and Development, College Entrance Examination Board, discussed the issue of structure *versus* ambiguity in admissions policies.

Because the decisions reached on the basis of such judgments have serious consequences for individual applicants (or students) and for the institution, it is imperative that the value or "validity" of various types of informaion be determined through institutional research. Both Hills and Woods emphasize the need (a) for defining criteria of academic performance which are considered relevant and which are acceptable to the institution, and (b) for determining in each institutional context, the extent to which the items of information available -- considered individually or in combination -- are actually predictive of student performance.

Hills examines critically a number of issues related to the problem of predicting academic performance of college students and recommends procedures which all institutions could profitably follow in arriving at decisions regarding the "academic potential" of present or prospective students. Woods reports preliminary findings of a study at one institution which illustrate the range of variables -- academic, socio-economic, personal -- which may be pertinent to predicting student performance.

Admission of Transfer Students

It is probable that an increasing proportion of the "new faces" on college and university campuses each year will be those of undergraduate transfer students -- individuals who have attended another college. Despite an increasing awareness of this prospect by college administrators and faculty, as Knoell indicates in her critical analysis of current data on the transfer student, few institutions have established systematic methods for identifying, describing, and dealing with such students. Reporting on a national study of transferees from two-year to four-year colleges being conducted by the Center for the Study of Higher Education at Berkeley, Knoell emphasizes both the lack of accurate statistics about transfer students (regardless of the type of institution of previous registration) and the need for systematic study of this growing segment of the undergraduate student population -- studies of patterns of migration, performance in the institution of immigration, etc.

Willingham notes a dearth of studies, in the literature on college prediction, involving prediction of performance among transfer students. He provides a critical commentary on technical problems related to the prediction of grades of transfer students, in the context of illustrative findings of his study of transfer-student performance at the Georgia Institute of Technology. Special consideration is given to the problem of deriving adjustment factors for variations in grading "standards" at institutions previously attended, a problem similar in many respects to that involved in evaluating the high school performance-record of first-time students.

College Environments and Student Selection

"Vagueness in the definition of the characteristics of a college and its student body. . . leads to choices based upon chance rather than understanding. . .to turnover, to the loss of harmony and teamwork, to disappointment and in some cases the permanent hostility of those who become identified with the college only to discover that it is not what they had supposed it would be" (Rowe, 1962). The development in recent years of instruments designed to facilitate the more systematic study and description of college environments -- for example, the College Characteristics Index and similarly constructed inventories -- has been accompanied by a number of comparative studies of institutional environments and investigation of the relation of institutional characteristics to various measures of student performance and motivation. Underlying much of this type of research is the assumption that more explicit description of significant institutional characteristics should lead to a more satisfactory "matching" of individuals and institutions -- *i.e.*, improved selection and guidance.

Differences and similarities in the "environments" of three Virginia women's colleges are described by Rowe, and Thistlethwaite reports results of his study of the relation of college environmental characteristics (press) to student retention rates, and student motivation for advanced study.

The Conditional Admission of University Students

Treatment of the "marginal" applicant (or admittee) has always been a matter of serious concern. Some institutions have developed programs of "admission-on-trial," pre-admissions counseling, or pre-admissions summer work for groups of students who do not meet specified "minimal" requirements for admission. All such programs should be evaluated with care in order to determine the extent to which they are meeting their specified objectives. Systematic appraisal should be conducive to improved internal decision-making, and knowledge of outcomes of conditional-admission programs in a variety of institutional contexts should be of value to any institution which is contemplating the introduction or modification of its policies with respect to "marginal" students.

Montgomery reports the results of a study of the relationship between performance in pre-admission summer courses and subsequent performance in the University of Tennessee and reviews some similar studies in other institutions; Weigand, in his paper, provides critical commentary on the history, nature and outcomes of a recently discontinued program of admission-on-trial at the University of Maryland and a discussion of some of the problems involved in the operation of such a program.

Measuring the Success of a College[5]

In recent years an increasing amount of discussion and research has focused on questions of the impact of students on the college *versus* the impact of the college on students. Differences among colleges in respect to "output," *e.g.*, proportion of graduates earning a doctorate degree and other "measures" of the accomplishment and attainment of graduates, *are* associated with differences in respect to "input" -- or attributes of students. If a college wishes to improve the "quality," in specified terms, of its *output* it may do so by selecting only those students with a high degree of "quality-related" potential. Papers by Webster and Thistlethwaite, already alluded to, are addressed on the other hand to questions regarding the impact of the institution on students -- *e.g.*, factors affecting student "growth," changes in motivation during college.

Sanford suggests that the most important consideration in the matter of how *the success of a college* is to be understood and appraised "is the question of whether we are interested in a final state -- in the actual characteristics of graduates at the time of graduation, regardless of how they got that way, or whether we are interested in how much change actually occurs under the impact of our institutions. It is one thing to set as our goal having graduates who will be a credit to us in the sense that they go to good graduate schools and accomplish a lot in life, but it is something else to ask ourselves how much we have succeeded in changing individuals from what they were like upon entering college."

The technical problems of "measuring" change -- whether in terms of academic achievement or personality structure -- are formidable; the problems involved in assessing the institutional "contribution" to observed changes are equally formidable. However, the institution *which is concerned with its impact on students* will not be deterred by the difficulties involved. As Sanford suggests, educators at such a college ". . .instead of bragging about how many bright students (the) college is recruiting right now. . .will talk about how many interesting and challenging educational problems confront the college (and what is being done to solve them)."

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[5] A paper presented by Nevitt Sanford at the Lexington Conference on Institutional Research, conducted under the auspices of the University of Kentucky and the Southern Regional Education Board, July 19-21, 1962. It is included here with the author's permission.

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PART I

COLLEGE ADMISSIONS: ADMINISTRATIVE AND RESEARCH PERSPECTIVES

Presented by

Felix C. Robb, President
George Peabody College for Teachers

Harold Webster
Associate Research Psychologist
Center for the Study of Higher Education
University of California, Berkeley

Cliff W. Wing, Jr.
Director of Admissions
Tulane University

WHAT FACTORS SHOULD DETERMINE ADMISSIONS POLICY?

Felix C. Robb
George Peabody College for Teachers

The whole country is stirred up over the college admissions question -- to the point where some nervous souls are trying to enroll their just-born offspring and even an occasional unborn baby.

A recent cartoon depicts two seven year olds sitting at a table piled high with learned books. One boy turns to the other and says, "Buckle down, Burton! Don't you know how hard it is going to be to get into college by 1975?"

For those of us who went to college in the pre-war depression years, the present dilemma seems fantastic. In those days many colleges and universities had difficulty finding students to fill their dormitories. One institution of my acquaintance, enrolling a thousand students, required the assiduous work of five or six recruiters to maintain that enrollment. Bargain basement tuition rates of "two for the price of one" were not uncommon, though never officially announced. The teacher shortage was unheard of and a buyer's market caused young instructors to feel fortunate to find an opportunity to teach four classes a day and take on a host of special assignments for $1500 a year. Twenty five or thirty years have worked a radical change in the academic marketplace and in the public's interest in college going.

Today, almost two thirds of all students enrolled in colleges and universities attend public, tax-supported institutions. In these the admission of students is a difficult matter for, with the tidal wave of applications, the gates on most campuses are, and have to be, opened wide -- or at least wider than in the private college which is free to be highly selective and forced by economics to be so. The drop-out rate, about which we exhibit greater concern at the secondary level is appalling in places where it is political or legislative suicide to exclude any high school graduates from admission.

In the background of what we refer to as "the admissions problem" are a few influential factors which have contributed to the situation we face today. Among these are: a zooming birth rate, a greater and more widespread aspiration for college, and the demands of an automated economy, with its implications for the labor market. Persons who lack advanced education are confronted by ever-decreasing employment opportunities. The premium is on knowledge, brainpower, and highly developed technical skills.

An observation is in order. There would be no severe "admissions problem" if we were to act upon any or all of several assumptions different from those which apparently operate in higher education. To ease current pressures in the colleges and universities we could assume that in the mobile world of 1962, we can transport students from over-populated areas to under-populated colleges easier than we can build new "colleges of convenience." This would require another assumption, i.e., any college offers more educational opportunity than most students are able to exploit fully and hence the pressure of admissions can be more widely spread and shared without damaging either the individual's or the nation's interests.

We could reject the assumption that society -- or somebody -- owes every college-age youngster a crack at higher education. We could even conclude that pregnancy pills will be utilized by millions of American women who want to relate family size to economic ability, to their career goals, or to social ambitions and that the birth rate will fall far below predictions for the next decades.

Act on any of these assumptions or upon a number of similar ones we could generate -- and the so-called "admissions problem" would dwindle. But other problems would mount in its place. The assumptions I have enumerated are not the will of our free, democratic society. My recounting of them is for one purpose: to indicate that the large question to which we address outselves in this conference is a complex one that is a function of society's goals, needs, and conditions as they are variously perceived and related to national purpose.

One factor looms larger than any other as a possible solution to the problem of collegiate admissions in the year 2000. I predict that by that date much of the present structure and format of undergraduate colleges will have changed. Herein may lie the ultimate solution, if there is to be one. Much of man's knowledge, experience and wisdom can be more efficiently and effectively communicated by individualized procedures of instruction and by independent study than in our present arrangement. The long-range answer to collegiate admissions lies in the changed nature of colleges themselves. It is frankly impossible for me to believe -- in the face of ever-mounting costs -- that the inefficient operations we employ will not be superseded -- especially in those instances where the institution is better equipped to give four years of the wrong kind of education than four hours of insightful analysis and guidance.

Another factor to be reckoned with is the question of survival of traditional evaluative procedures -- grades, to use plain language. It is reasonable to assume that the common numerical and alphabetical schemes for faculty ratings of student achievement will be in operation next year and for the next ten years. But if we dare to peer toward the year 2000 -- I venture to say that the straitjacket of current grading systems will be in disrepute and better ways of attesting to a graduate's culture and competence will emerge. Such a change would have profound influence upon admissions.

At the outset, let us recognize that the admissions problem of the state college or the state university in the typical state is vastly different from that in a struggling private college. Both problems are different from that found in an economically privileged private or public institution that sets high admission requirements and contends with a long waiting list of eager applicants. In the case of the latter, a large proportion of the applicants for admission will be first frustrated by delays in hearing the outcome of their application -- and then finally rejected. I want it clearly understood that I think we can live with this problem and that I believe the experience of failure -- failure to be admitted to the college of one's choice, or any other kind of failure, is essential to our concepts of success. Nevertheless, we could face a critical problem if all of our 2,000 colleges and universities should decide to demand excellence and implement this standard at the point of admission to the freshman class.

In the first place, there wouldn't be enough excellence to "go 'round." In the second place, an exclusive concern for the rarified upper 10 to 20 per cent of the college-age population could lead this nation into deep trouble.

This is not to say that students with superior intellects need less attention or fewer intelligent applications of resources to their development. On the contrary, from the ranks of these brilliant youngsters must come most of our great future scientists -- the people who will conquer space, disease, etc. But all too few of these brightest youths will make any significant difference of any kind whatever. The colleges and universities likewise have a responsibility to the mid-range and the lower middle range of students who may become valuable citizens and careerists. Indeed, from this group will come most of the people who, in the future, will endow our colleges!

Last August, at another SREB-sponsored research conference, President Gordon Blackwell of Florida State University enunciated a proper warning that I wish to repeat to this conference, for in our concern for ideal situations and the extremes of brightness and dullness we often neglect the massive mid-range population. Dr. Blackwell said (1962):

> . . .because of our increased bigness, the college administrator's knowledge about the student must be knowledge that is applicable to students in general, certainly to large, identifiable groups of students. Studies about the rare or unique student should not compete with data about the larger group of students that must necessarily be the central

> focus as enrollments mount, for we need data which are realistic and usable right now. Studies which provide guidelines in utopian situations, where resources of personnel and money are unlimited and time not pressing, will only complicate the administrator's thinking. We shall have no utopian situations in the 1960's.

The aspiration for collegiate-level experience has reached tidal-wave proportions and is still growing. Some of the motivation is vocational; much of it is economic. For instance, the very successful coach of Ohio State University's football team is reported to keep his most promising players out of clutches of professional football scouts until graduation by convincing his boys that each year of college is worth, on the average, $45,000 in future earnings.

Some of the motivation stems from increased recognition of the value of a trained intellect; some of it is sheer crowd psychology, "running with the herd." Some of it is social climbing; some is plain, unadulterated recreation seeking by academic bums. In other cases, the motive force is a parent, or parents, who "try to get their children into the 'right' college for the wrong reason," as Fred Hechinger says.

Anybody who proposes to have a clear, simple answer to the complex question of college admissions is either the fellow we've been looking for, to no avail, since World War II -- or he just doesn't comprehend the situation! I am not the prescient one, and it is not my intent to answer the question posed; that is our problem and the task of this conference. I hope only to ventilate the issue.

Factors to be Considered

Prediction studies in the area of college admissions, for a period of thirty years, have shown a monotonous similarity in respect to the types of variables studied and the general nature of findings reported. Preponderant emphasis has been placed on studies of aptitude and/or achievement test scores and some index of secondary school performance as predictors of college grades. In general, the latter has been found to constitute the most valid single predictor of college performance in a variety of collegiate contexts. Both types of evidence combined typically lead to better prediction of college success than either alone.

Past Academic Performance

What is involved in the student's academic record? Interpretation of the academic record, as reflected by grades or by rank-in-class, clearly involves consideration of strength of the program on which the record is based, strength or quality of the school, and perhaps knowledge of an individual recommending teacher. I add the latter because of the status of reliability in recommendations by certain high school teachers whose judgment is so often right that it becomes a decisive factor in the admissions decision. Few principals of large high schools know as much as the perceptive teacher about the kind of intellectual challenge a student has faced and how well he has handled it.

Although the academic record tends to speak for itself, it is strengthened materially by the corroborative recommendation of teachers, the school principal, or the guidance counselor. Most colleges with selective programs of admission, moreover, rely on responsible high school people to give confidential judgments that sometimes cannot be written on a form or transcript -- judgments which provide a basis for evaluating the "written record."

In using the secondary school record for admissions purposes, no set patterns may be found among colleges. Some have a fixed cut-off point for high school grade averages while others are more flexible; some consider only "solid subject matter courses" in computing the average while others base calculations on the entire school record. Many, particularly institutions which have selective or competitive admissions programs, differentiate between public and private schools -- between "unselective" and "selective" secondary school situations -- in evaluating grade averages or rank-in-class data. For example, at Bowdoin "candidates who rank just below the top fifth in public schools or below the second fifth in private schools are considered only marginally acceptable." (See College Entrance Examination Board, 1961)

Although differences in the "meaning" of rank-in-class as a function of differences in the "level" of the secondary school group in which an individual competed are recognized (as in the example just cited) many colleges do not take great pains to evaluate, or to reappraise periodically, the school from which an applicant comes in interpreting the grade record. High schools as well as individual students, teachers, and programs of instruction change from time to time, making all the more mandatory some mechanism whereby we can revise statistical weighting systems or evaluate the evaluator who passes judgment on a school or upon a student's prospects for success in college.

There is, however, need to recognize school differences and make appropriate allowances in the interpretation of a given individual's school record. The complaint of the headmaster of one selective preparatory school regarding lack of consideration of "level" in the interpretation of class rank is worth hearing out. Says Francis Lovett, Jr., (1961) headmaster of Hillsdale School:

Obviously, rank-in-class has meant discrimination against some students who actually were qualified for the colleges concerned; qualified, that is, by academic achievement, by CEEB results, and by standards of character and personality. In every instance decisions against admissions were made in the offices of colleges to which we had previously sent no students, or to which students had not gone after being accepted, or to which an occasional mediocre student had gone in the 'good old days.

My own emotions are diverse: that colleges have excellent reasons for demanding rank, I recognize; that the present insistence on dividing human and local intangibles into arbitrary segments is reasonable, I deny. Cannot college admissions methods be coordinated (perhaps through the good offices of the Association of College Admissions Counselors) by a generally accepted system which recognizes subjective influences; which allows for the five-course student more 'case value' than for the four-course student; which evaluates on a higher scale the 'honors' or 'advanced standing' course?

Scholastic Aptitude Tests

The importance of scholastic aptitude testing to college admissions needs no elaboration. Although a surprising number of colleges do not require tests for admissions, it is the rare institution which does not administer and use the results of tests as bases for guidance and placement after students are admitted, and many institutions are undertaking test requirements for admission. The two most widely used testing programs for admissions purposes are those of the College Entrance Examination Board and the more recently developed American College Testing Program.

As indicated earlier, however, more meaningful than test scores *per se* are test scores considered in combination with indices of secondary school performance. Not only are predictions of college performance more accurate, typically, when both types of evidence are used, but it is also possible to consider such matters as "underachievement" and "low motivation" by comparing standing on tests with grades earned in school. In addition, test results help to identify and evaluate differences in secondary school standards.

Apparently a number of colleges, however, are challenging the use of objective test scores; the rumbling is sufficiently loud to suggest that a significant shift in thinking (or wondering) is taking place. This will bear watching closely. The challenge to testing comes in part from highly sophisticated test users who have known all along the limitations of tests as predictors of success in college and who are conservative in their claims for tests. But the challenge comes also from the "low standards boys" who are so "democratic" that they view a test as a discriminatory device inimical to the best interests of mankind! There is, in general, increasing recognition of the fact that test results alone do not provide an adequate basis for admissions decisions. There is also some disquiet over the preponderance of objective testing, with relatively little attention given to tests such as the "writing sample," which requires the individual to express himself in his own terms. I personally view such tests with much favor, even though administration is tedious, scoring difficult and time consuming, and outcomes subject to the vagaries of stress for the person whose habits of composition and personal discipline do not yet accommodate well to such a testing situation.

Non-Academic Factors

Along with our treatment of past academic performance and test scores, it is well to introduce consideration of other types of factors, generally subsumed under the heading "non-academic" or "non-intellective," which are relevant to the admissions process. While, in general, measures of such variables have not been found to yield substantial correlations with academic performance they are frequently considered in discussions of admissions problems and have great significance as areas for further study and investigation.

The problem of defining and discussing the many non-academic characteristics which might be considered in the admissions context is formidable. However, we may begin with two traits which are cited by college admissions people with increasing frequency. First, they seek evidence of intellectual curiosity. If cultivation of the intellect is the clear and principal responsibility of the college and university -- and I think it is -- then intellecutal capacity, interests, and verve of the student must be primary considerations in any high grade admissions program. The second of these considerations is potentiality for independent work. Is the student an intellectual "self-starter"? Illustrative here is a description provided by California Institute of Technology of their successful applicants for admission (College Entrance Examination Board, 1961):

> (They are) highly motivated to continue their education. They demonstrate initiative and self-direction in their studies. They are able to keep working on difficult and detailed assignments until completion. They display potential creativeness. . . . They have not been 'stretched' intellectually.

Along with the two factors just discussed, we find a variety of other human characteristics or attributes frequently considered in the admissions context, including the following:

Motivation. The factor of general motivation and ambition needs study and clarification. Why does the student desire to go to college in the first place? Why to this or that particular college or university? Who is motivated, the student or the parent? How dominant in the decision to go to college are "herd instinct" and concern about social status? Can we begin now to do what we've always wanted to do: i.e., weed out the casuals, the incompetent, and those mate-hunters who lack basic qualifications or interest in a serious intellectual experience? Can we guide into other and better channels those who are morally or emotionally unfit for membership in the academic community?

Character. Good old-fashioned character -- honesty, reliability, responsibility -- seem to have gone out of style in some quarters along with "character loans" at the bank. But a surprising number of colleges and universities still cite character as a qualification and emphasize it. This factor should be high on the list of desirable attributes of college applicants.

Personality. Here is a big, inefficiently handled area, including such concepts as, for example, emotional stability. As we seek better teachers for America's schools, for instance, we urgently need to find ways for early identification of those individuals whose emotional problems make them unfit for classroom teaching.

Special Abilities or Interests. Most colleges and universities seem to be vastly more concerned about general collegiate aptitude than about special talent or highly specialized interests. This is peculiarly logical for liberal arts colleges if they are to perform in accord with their stated missions. However, there is much need for consideration of individuals with highly developed abilities in one area and I would place this factor near the top of the list if I desired to bring together a stimulating student group. Breadth of general education and specialized competence need not, indeed ought not, to be mutually exclusive but a few mavericks are valuable.

Extracurricular Skills. I am inclined to believe that students with unusual proficiency in extracurricular skills such as golf, baton-twirling, swimming, football, piano-playing, etc., should be given consideration if they can meet honestly applied standards of admission. They are useful -- even inspiring -- citizens to have in the academic community.

Economic Status. Increasingly we screen applicants for college not merely on their human traits but on their ability to pay for higher education. Because this results in a serious loss of talented manpower from the top quarter of high school graduating classes, I view the more adequate financing of college work for economically deprived but bright students as a must for our society.

Physical Attractiveness. Without evaluating the influence of physique and physiognomy, is it accidental that the Stanford undergraduate student body is replete with paragons of beauty and handsomeness in the "All-American boy or girl" sense, while students of certain other colleges are strikingly sallow-faced and grubby-looking in the tradition of the "greasy grind"? Private institutions increasingly rely on selective mating in the upper social and economic brackets to provide freshmen who do not require financial assistance. Good looks are a by-product of this procedure. Parents who want their offspring to "marry well" are not unaware of the implications here.

Dearth of Operational Measures

Consideration of the diversity of non-academic factors which impinge upon the admissions area -- and those just enumerated are merely illustrative of the range -- is no less more complicated than the search for operational measures of factors which can be used successfully in the admissions process. Eugene S. Wilson (1961), Dean of Admissions at Amherst College, reports an interesting experiment bearing on this problem:

Faculty members were asked to provide names of "creative, imaginative students, the kind they enjoyed teaching." Thirty-seven faculty members provided names of 141 different students out of the 750 enrolled in the three upper classes, and these individuals were studied carefully in search of some common characteristic which would enable the admissions office to choose more of the same. In general they seemed to have little in common that could be detected through use of data available in the admissions process!

The Personal Interview

Generally speaking, much effort is required in order to clarify thinking and concepts in the area of non-academic factors which so often seem to defy direct measurement. In this connection, the personal interview is often used for assessment of those traits that elude the admissions officer in handling paper credentials. Among its chief drawbacks are its difficulty as a requirement for applicants living far from the campus and its administrative difficulties and costs. About the personal interview, one college has issued the statement, "We do not expect to learn anything about the student which will not be reported by his school, but we believe the visit will help him to determine whether or not to apply." This is a widely held attitude toward interviews which can be useful for purposes other than selection of students. In general, unless handled with extreme care, judgments based on interviews may be misleading.

Selected Problems and Issues in Admissions

No discussion of the admissions area should be undertaken without some reference to certain problems and issues, including (a) the question of restrictions and "quotas," (b) the question of seeking balanced enrollments among departments, (c) the problem of variation in standards among departments or schools within the institution, (d) the problem of "the middle group," and (e) the trend toward "early admissions."

Restrictions and Quotas

There are some restrictive measures which institutions sometimes employ but are loathe to publicize. What restrictions does your institution employ with respect to religious faith? Are members of all races admitted? All nationalities? Is your geographic distribution confined to a state? What about the special problem of international students who desire admission? This question certainly is in need of more study. Financial status? (As costs rise, we place increasing stress upon ability to pay as a principal criterion for selection. The entire question of financial aid for college students needs to be aired thoroughly in the national interest.) Relationship to alumni? Athletics or other outstanding talent in student activities? Physical limitations in dormitory space which do not dovetail with the optimally efficient use of the faculty?

Balanced Enrollments among Departments

Many selective institutions attempt to maintain a numerical balance among various programs represented in the preference of candidates for major fields. Undue emphasis on this approach could induce abortive career decisions, but it can be employed as a balance-seeking device with those youngsters who have already made a clear choice of college and of a major field, without any attempt to induce an early decision or to proselyte from one field to another for the sake of a desirable numerical distribution within the institution.

Certain fields, such as music, virtually require a decision by the entering freshman if college is to be a four-year experience instead of a longer one. Carnegie Tech, for instance, carries the notion of early specialization -- or at least early identification of major interests -- one step further and maintains special departmental admissions requirements in such fields as drama and music. Is this good procedure? It is the practice of virtually all graduate schools, where the department has the real control over admissions to degree candidacy and actually influences very heavily the initial and general admissions policy. Of this I am sure -- whether at graduate or undergraduate levels -- general admissions policy and departmental practice should not be vastly different if grief and trouble are to be averted.

Variations in Admission Standards of Departments or Schools

A hodge podge has developed in the differing standards for admission set by various departments within a college or by the several schools within a university. The former is a more troublesome problem than the latter. For those colleges and universities which are interested in numbers and which accommodate three fourths of America's student population -- an admissions policy was proposed last year by Dr. Sam P. Wiggins (1961). Wiggins creates three categories of admissions: The Regular, the Accelerated, and the Decelerated.

> The student admitted to the Regular category would pursue a program of studies at the regular rate. The Accelerated category would permit, but not require, the exceptional student to take course overloads and complete course requirements for the degree in less time. The Decelerated category would require a reduced student load in view of the marginal nature of the student's demonstrated achievement or aptitude. Classifications should be reviewed periodically to adjust workload to quality of scholastic achievement.

We need to protect colleges as much as possible from whimsical applications for admission from students who are shopping around for a bargain, a handout, or merely "playing safe." A reasonably stiff non-refundable application fee would curtail the activities of the worst offenders.

So long as the "no shows" continue to run as high as 35 to 40 per cent in many colleges, the evidence is strong that there is need for a higher level of confidence and effective relations between the high school guidance counselor and the school principal on the one hand and the college director of admissions on the other. Too few directors of admissions get out into the field and become personally acquainted with the persons and schools from whom their institutions are drawing a large portion of their student population. This might help counteract some of the bad guessing that has been taking place about the percentages of admitted students who actually enroll.

In the high schools, better guidance continues to be desperately needed to avoid undue expense, unhappiness, and failure on the part of improperly advised and overly ambitious applicants to college.

The problem of multiple applications is alleviated by adherence to a uniform reply date for candidates. But it is impossible to keep 2,000 colleges and universities synchronized for any purpose, including this one!

The Problem of the Middle Group

The admissions problem at some colleges and universities in the upper strata of selectivity is akin to that at Harvard. There, 90 per cent of all candidates for admission could probably do at least satisfactory work and yet large numbers of these able candidates must be rejected.

At Harvard, the selection process is reported this way (College Entrance Examination Board, 1961):

> The small number of really brilliant students who appear to possess sound character and personality are admitted; they make up perhaps 15 per cent of an entering class. The small number who seem unable to do Harvard work or are likely to face undesirable strain in attempting to meet academic requirements are turned down. The great majority of our candidates would make satisfactory-to-good academic records. It is within this solid, but not absolutely top-notch, academic ability that we believe non-academic factors are particularly important, and we attach considerable weight to them in our selection.

Here you have the dilemma of the "better-than-average boy seeking admission to a select college." He perceives himself as too good for most colleges, but he is "too numerous for the best!"

Incidentally, Ivy League admissions practices seem to be inducing slightly fewer applicants for admission. The word has got around and self-selection is operating increasingly.

Harvard asserts (College Entrance Examination Board, 1961):

> Given adequate academic ability, the main factors on which the committee puts emphasis are: unusual strength of character, maturity, creative ability in some field, capacity for leadership, rural or small-town background, athletic ability, unusual enthusiasm and energy and determination, demonstrated interest in a particular field of study, modest background, intellectual curiosity, a sense of responsibility, and concern for the public good. . . . The committee is much more interested in the quality of the applicant and the quality of his record inside and outside the classroom than in the school from which he applies -- private or public, well-known or obscure.

"Early Decisions" Plans

President Edward Eddy of Chatham College says "something has to give" in the admissions situation because colleges and universities with variably expanding enrollments are trying to maintain standards (not raise them) in order to serve the new masses of students knocking on collegiate doors. Eddy contends that growing colleges need more time (at least 8 months) in order to staff up each year. It is all well and good for those of us in the smaller institutions to retreat into smugness and vocalize about our quality while we leave a real and massive burden to others. The private college does not have a choice, if it is to maintain quality, or improve it, and justify its existence. But let us not overdo the beating of the drum about quality or pretend that we really had a choice when we didn't.

Dartmouth employs an early admissions program for its clear cases. Beloit College, like a number of colleges, has what it terms a "rolling admissions policy" whereby a student may be admitted on the basis of a high school record through the 11th grade. In the case of some colleges a non-refundable fee (*e.g.*, $100) is required to validate an early decision offer of acceptance.

I suggest that more colleges and universities follow the plan of identifying their early admissions group who are (1) clearly qualified and (2) who want to attend *only* the college or university of their choice, and (3) who will pledge themselves to withdraw all other college admission applications and "stay hitched." This would help cut down on the multiple application problem.

Moreover the competitive scramble to attract the top 10 per cent in aptitude and performance, the *creme de crême* of the senior classes, may push us into new rivalries, in the early capture of the choice students. By the year 2000, will old Siwash be writing, "We like your performance in the third grade and believe you are Siwash material. Therefore we are reserving a place for you in the class of '09 -- 2009, that is."

Perhaps we should pause in the midst of our deliberations about the admissions problem and view it not as college officials or high school principals, but as students and the parents of students. Putting pressure on students to make very early decisions about college may force decisions to be based on limited knowledge of what the youth's ultimate potentialities and resources may be.

Concluding Observations

In concluding, I should like to make a few random observations:

I note a growing anxiety among college and university administrators and parents about the public relations implications of a "tough" admissions policy. A loyal alumnus who has dreamed for sixteen or seventeen years about the maintenance of a family succession in alma mater is easily disillusioned when his progeny do not receive favorable action on their applications for admission. He tends to withhold his usual contribution to the living endowment fund! Vanderbilt overcame this hazard in its wonderfully successful recent financial campaign. Princeton, Yale, and Harvard did it. But can it be done by lesser institutions dependent upon gift support from alumni? I hope so.

Another concern is the necessity of an institution -- public or private -- to maintain fiscal stability. The private college may accomplish this by refusing to admit more students, whereas the state institution has a way of benefiting in accordance with size, because legislative appropriations are geared to quantitative growth.

The whole question of financial aid looms ever larger on the academic horizon. As costs of tuition and living expenses mount, students -- especially the outstanding ones -- are looking not only for admission but for the largest possible scholarship grants-in-aid. The existence and non-existence of scholarship aid affect drastically the choices of a college by students. A federal scholarship program, if enacted, would undoubtedly, "loosen up" the college-going habits of the nation and allow more economically deprived students to enter the colleges of their choice. But there are signs that all universities are becoming too dependent upon federal support.

The entire admissions problem can be helped if the colleges will publish clear, forthright statements as to the kind or kinds of student each seeks. With this practical help, more self-selection would be induced.

Some colleges and universities are seeking too often the "all-around" student instead of distinctive individuals -- thereby denying potentially creative and successful students their chance. We should be readier to look with favor upon the talented asymetrical student. Let us not assume that all freshmen must start from breadth, or interest in breadth, but let us assume rather that a college or university has the power to inject breadth into the talented and overly specialized individual.

It is widely held knowledge that few seniors in high school care to admit that they are not going to college. Going to college is simply "the thing to do." Rather than perpetuate a hoax, we desperately need to create prestigeful alternate tracks for the youngster who is not really adapted to or interested in college work.

Admissions pressure has, I suspect, reduced somewhat the easy geographic interchange of students from one state or region to another. When spaces are few, they tend to be reserved for students in the localities which best serve and support the institution, and this engenders a localism in the same way that financial pressures tend to keep more college students in their own home towns. Whatever adds to provincialism is undesirable.

We need to ask ourselves this question:

To what extent are our admissions policies for freshmen influenced by our desire to induct into higher education a larger number of students who are geared up for a voyage that will carry them to graduate school and the Ph.D.? We are now beginning to screen in significant numbers not only for the undergraduate schools but also for (and in some cases especially for) graduate schools!

We need more and better research focused on the problems of college admissions. William College has a grant to study for ten years the achievement of what they term the "calculated risk" students -- those admitted without notable academic achievement but with "promising qualities that defy scientific measurement." More can be done for the marginal student by summer admissions and programs of quasi-remedial nature.

We need carefully designed studies of the student culture about which we know something but not nearly enough. Studies of mental ability, motivations, finances, class rank, sex, and military service are but a few needed. Add to these some perceptive studies of parents -- their education, occupations, ethnic origins, and their attitudes. Then we should have the benefit of analytical explorations into the characteristics of schools -- their size, accreditation, peer influence, teacher influence, guidance and curricula. Finally, we need more knowledge of community characteristics and how these relate to college-going and to the factor of college proximity.

For all our attention to the problems and adversities accompanying college admissions, there are some positive, hopeful aspects as well. For one thing, high school guidance is improving. Information about colleges and about admissions is more widely disseminated than ever before and is more accurate and complete.

Perhaps most significant of all, a steadily increasing number of colleges and universities -- especially the public ones -- are acquiring new aspects of excellence, adding quality in faculty scholars of rank and in notably expert teachers and stronger programs of instruction. The result is that the able student has more and more challenging places in which to seek admission.

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PROBLEMS OF STUDYING EDUCATIONAL GROWTH IN COLLEGE STUDENTS

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Problems in studying educational growth seem currently to fall into two categories: First, actual technical problems that arise in interpreting longitudinal data collected from students during college; and, second, the more general problems of carrying out studies of educational growth, and, in fact, any other kind of large scale social research in institutional contexts. The second kind of problem is of keen interest to college administrators, while the types of problems that must be attacked in order to improve our understanding of change and development within individual students are ordinarily more interesting to research personnel than to administrators. Both types of problems should be of some interest to admissions officers who have both administrative and research responsibilities. First we will consider the organizational structure and functioning that is required in order that any large scale social research be carried out successfully, and then discuss briefly, within this general context, some central technical problems and questions involved in the study of educational growth in college students -- problems that will arise in any systematic assessment of the educational process.

Research in Educational Settings:
Approaches, Problems and Issues

During the last two decades the organization of empirical social research has been modified by the emergence of the university-affiliated social research center or institute. In a study supported by College Entrance Examination Board, Lazarsfeld and Spivack (1961) report on the general organization of social research. Lazarsfeld, Sieber, and Dibble (in press) are now publishing a more intensive study of organizations that specialize primarily in educational research.

Of 94 universities giving 10 or more Ph.D.'s in 1957-58, the deans reported no social research institutes in operation at 38 of them. Of these, 10 were land-grant institutions and 14 were technical colleges that do not emphasize social science. Of the remaining 14, about half are now considering establishing some kind of institute.

Social research institutes seem to be flourishing despite some severe handicaps. For example, they are not well-financed, in the sense that they have permanent budgets. The affiliated universities contribute very little to their support, and the foundations are unwilling to extend aid beyond that required for specific projects. A certain proportion of the regular faculty regard the institute as a competitive evil; they may think that it is the means by which "the organization man has invaded the academy." For this reason administrators are likely to emphasize that the institute facilitates work that regular faculty would like to undertake; but often "the inner dynamic of the work presses in the direction of consolidated autonomous units," which are more reasonable for facilitating the kinds of research needed. At the risk of losing the support of regular faculty, the more adventurous and research-oriented graduate students may benefit from training at institutes.

Only a very few social research institutes existed before 1940, and the authors feel optimistic about the future of this movement. Specific protection and nurturing of institutes is now a policy of the boards of trustees and the administrations of some of our most prestige-conscious universities, e.g., Stanford and Harvard. As time goes by, the younger faculty will probably come to accept them, especially if part of their training was obtained at one of them. Nevertheless, the future of the social research institute remains uncertain. The existence of research and development divisions in industry does permit a fairly permanent arrangement for "research into the future" for physical science, but the general attitude toward social science is quite different. And distrust of social planning may continue to impede the organization of large-scale, or intensive, social research.

All research institutes are conscious from time to time of the need to learn more about the ways in which empirical results can be of service to policy makers. But the authors found that "no observations in the field of organizational research justify the distinction between 'applied' and 'basic.'" Apparently, either approach, or philosophy, can lead to important results.

When Lazarsfeld examines the data on educational research, he seems a little surprised to find so many complaints about its quality. Leaders in education, among others, have vehemently criticized educational research. In seeking an explanation, the authors note that educational research has differed from other social research in several respects: much of it has been conducted by individuals with very small grants, who have not been connected with institutes, or even with schools of education. The role of research in schools of education has remained ambiguous, and no norms prevail to relate education to its basic sciences. The distinction between service and research, or between service-oriented research and other kinds of investigations, is very crucial for educators, who feel strongly committed to traditional obligations of the teaching profession. Some of the more important activities required in order to conduct educational research, for example, testing and evaluation, have been separated from schools of education, in order to be more thoroughly developed in external agencies, for example, at Educational Testing Service.

The authors classified the research activities in educational institutes according to whether they were concerned with internal or external aspects of schools and according to degree of service-orientation, degree of diversification and specialization, and amount of autonomy with respect to the affiliated university. Units providing field services were more likely to be diversified, and public institutions were more likely to be affiliated with institutes in which the research was diversified, than were the private institutions. The activities of 60 institutions for educational research are distributed rather evenly over the topics, Administration, Psychological Studies, Curriculum Construction and Test Construction, each being checked by nearly half the deans. About a third checked Social Aspects of Education and School Buildings, and a fourth checked Services (*e.g.*, Test Administration) and Instruction, the latter being written in because it had not been included on the checklist. The report then describes the activities in more detail, which we need not consider here. The authors could find no study of the relationship of characteristics of teachers to their success in handling various curricula. This suggests to the present writer how far behind colleges have been in research on the psychology of development and learning.

Emergent Research Problem

Here we continue with the Lazarsfeld report, but the discussion will not be confined to it. Among current problems of educational research, three are central: the research-service conflict, the career needs of research staff, and the research climate within schools of education.

Within the institutes and the schools of education there is a strong tendency for service to take precedence over research. There is more demand to improve education than there is to understand it. As a result service experts come to view themselves as influential or highly valued, by comparison with research experts. Service investigations are either "social bookkeeping," of a kind that is useful but unoriginal, or else they consist of consultations based upon case studies that lack generality. There is no time in service investigations to conduct research based upon theory, and consequently there is a preference for experienced practitioners rather than for researchers or innovators. The research expert does not easily communicate with practitioners; he enjoys less power than the service expert, and he may be victimized by competitors who are also trying to survive in this relatively unrewarding field.

Young people interested in the systematic study of human development within social organizations such as schools may join a social science department, but once there they find that education is not a popular topic; they then move on to other problems. If instead they join a school of education they will find that training for school administration is favored over, or even confused with, the training for research in other educational areas. The kinds of students attracted to education are seldom critical thinkers, to judge from their uncritical attitude toward education: it is supposed to be the solution for everything. Doctoral candidates often aspire to positions in the state educational hierarchy, most of which have no research function; or else they join a quasi-research agency that limits its activities to compiling social statistics. The able researchers often move into outside agencies, e.g., Psychological Corporation, and are therefore lost to schools of education or to research institutes affiliated with such schools.

Reports such as Berelson's (1960) also support the finding that research is not emphasized or encouraged within schools of education, and for this reason research institutes may play a helpful role in training graduate students. At a typical institute around 8 or 10 students a year usually have an opportunity to work on data.

The preceding summary of the Lazarsfeld reports does not do full justice to them, but most of the important points have been covered. I will comment further on some of these points.

First, the service-oriented person is always in demand, and the top service professions, such as law and medicine, are so powerful that the universities often encounter special problems in maintaining professional schools. For example, not many psychiatrists are also competent to conduct social research, but even if they were, few of them would care to do this within the liberal arts colleges, schools of education, or social science institutes, where they would encounter unsympathetic attitudes and a lower pay scale. The service professions were, nevertheless, established by men with strong research attitudes; for example, the men who founded modern psychiatry often complained that they were forced into service activities in order to earn a living. Currently there is a growing concentration of research talent within several kinds of professional schools, and universities are concerned about the increased polarization and competitiveness between their liberal arts graduate schools and professional schools. It is therefore probably only a matter of time before schools of education would be able, if they so chose, to compete successfully in research activities with basic social science graduate departments. In order to understand the trends, however, a most important psychological fact is sometimes overlooked: no innovative or creative research developments can occur in the absence of a high degree of talent, either in the professional schools or in the graduate departments.

This point seems worth discussing further; it is easy to find evidence to support it. Among graduate students, those in education have not ranked especially high on standard tests of academic aptitude or achievement. Apparently the same has also been true of the students admitted to graduate schools of business, and this has had some serious consequences for modern industry. Ernest Dale (1962) observes that the new corporation managers are very expensive, lack imagination, and place an inordinate emphasis on keeping informed about what managers elsewhere are doing in order to solve their own problems. "...the emphasis on human relations has led to the exaltation of the smoothy and the distrust of intelligence. 'Brilliant' is now almost a damning adjective. And since the essence of much of the teaching of human relations has been that there are no real conflicts of opinion within an organization, only 'failures to communicate,' the tendency is to smother dissent" (p. 61). When it was suspected that "some essential spark is lacking in the new management type," it was found -- belatedly, it would seem to a psychologist -- that the missing ingredient was intelligence.

Is it possible, therefore, that some of the problems of schools of education, as described by Lazarsfeld, are psychological, having to do with the substitution of pleasant human relations, rationalized as essential for service, for critical, independent thinking? More pertinently, if most of the brilliant (but possibly unpleasant) young men are now studying the effects of drugs, or new developments in tensor calculus, or high energy physics, or painting, then how can some of them be enticed into serious social research that might have a salutary effect on education? There seems to be no reason why professional education cannot develop its own high level basic social science research, at least to the extent, say, that medical biochemists work at their own versions of chemical problems, research that compares favorably with earlier work undertaken only within liberal arts graduate departments. But to repeat the point, it is difficult to see how this transition could occur in the absence of a high degree of research talent.

Regarding the career lines of researchers, the most creative are probably among those who persist in doing research regardless of other commitments, or of a lack of recognition of their own work, or of any other circumstances that could and frequently do seriously impede or block the less able. Research occurs wherever there is a person with a strong enough "obsession" to carry it out, regardless of the circumstances; and I have seen it conducted successfully by housewives who had no college degrees, by undergraduates, and by admissions committees in small colleges.

One aspect of human functioning that currently deserves more attention from research-minded personnel is the service orientation. Society gives different rewards to service and research personnel, and it also distinguishes the two kinds of activity in terms of different value systems that may or may not be realistic. For example, research is often conceived as a masculine enterprise, that is, it is logical, theoretical, manipulative, and objective; and service is thought to be nurturant, understanding, intuitive, and perhaps somewhat maternal. On the other hand, service personnel often earn the highest salaries on the supposition that something special they can do (which may be regarded as logical, powerful and masculine) will surely help others. The service-research conflict, with its potential role-conflict overtones, is therefore replete with interesting research hypotheses about students, about educators, and about education. Until the service-research dichotomy is better understood, there is really no way to decide under what conditions the one set of values may preclude or preempt the other. Yet it often appears that individuals capable of functioning in either role or in both roles would be among the most valuable members of our modern universities.

Need for Orientation Toward Institutional Research

I have already said that research is where you find it. A person with a strong enough research orientation will do research anywhere, and such an individual is never an unqualified blessing to others, or to a conventional or bureaucratic institution within which he is expected to function. It is a wonder, for example, that so many of the patients of the earliest psychotherapists survived treatment, so strong was the need to understand the functioning of the mentally ill. The same dubious effect is exerted by the rare college administrator who ceases to emphasize smooth public relations long enough to study very carefully and experiment with his own institution. A common expectation of an administrator is, of course, that he shall provide service, by which it is meant, that he shall be encouraging, protective, and nurturant: a kind of Great Mother! Or that he will analyze everything that is going on, and that might occur, and therefore will be able to fight off attacks on the institution, as if he were a Good Father. But we should be skeptical about the viability of educational institutions, the members of which think that they require these parental types of administrators. Lazarsfeld has examined only a very limited segment of our universities, but he has concluded that in this segment the spirit of free inquiry, or of research, is lacking. It would be better for our schools and colleges, especially during this period of transition and redefinition, if they had administrators who were so curious about the functioning of their own institutions that they would carry out institutional research, as well as what is more traditionally regarded as service.

Stecklein (1962), himself a director of a research bureau, has described three kinds of institutional research as follows:

> Some people consider the routine collection and tabulation of data to be institutional research. For example, in the surveys of institutional research activities . . ., some colleges reported, as examples of institutional research, data collected routinely on enrollments, grade distributions, and characteristics of the student body. No evidence was offered to indicate that the data were used to study particular problems or practices.
>
> Individuals who hold the second concept of institutional research think of it only in terms of direct administrative assistance.

In other words, institutional research to them is the continuous investigation and data collection that are needed for immediate and long-range administrative decisions. Frequently, but not always, the bulk of the work handled by such an office or individual is limited to budgetary analysis, space utilization studies, enrollment projections, and other data analyses that are immediately related to the fiscal operation of the institution and to the job of making the budgetary presentations and allocations as convincing and as efficient as possible.

The third concept of institutional research is the broadest including both types just described, but with a broadening in both the subjects and purposes of the research. In this broadest sense, institutional research is the continuing self-study of all phases of institutional operation, involving any or all subject matter areas of the institutional program, the institution's organization, clientele, and personnel. It utilizes a greater variety of evaluative and data-collecting techniques than the other types, and is broader in terms of the personnel involved in the initiation and conduct of institutional research. In other words, the broadest type of institutional research would include studies of enrollments, budget, faculty load, class scheduling, space utilization, and other forms of typical administrative problems, as well as studies of teaching methods, analyses of curriculum, studies of student classification and achievement, evaluative studies of special programs or course innovation, surveys of the faculty, follow-up studies of graduates, etc. Such studies might be initiated by the president, by deans, by individual faculty members, by faculty committees, or by the person responsible for the on-going institutional research program. Faculty-initiated studies are usually much more sporadic than administration-initiated studies, but are often more extensive and of wider academic scope. I must add that any college or university that makes a comprehensive self-survey (the usual frequency seems to be one every 15-25 years), will inevitably find itself involved in the broad type of institutional research, if it is done properly. Furthermore, a typical outcome of such self-surveys is a recognition of need for additional or continuing study of certain problems brought to the surface by the self-study. This recognition, and interest of the faculty, has sometimes led to the establishment of an institutional research unit.

Stecklein adds that he is prejudiced in favor of the broadest concept, and it is easy to agree with him. For it seems to offer the best possibilities for getting close to the educational process as it takes place within students.

Admissions-Related Research

It is probably safe to predict that of all characteristics of colleges it will be the characteristics of the student body that will rank first in general importance. Faculty turnover is high in most colleges, and the kinds of students that faculty are expected to help educate certainly will have something to do with this. For example, the better students often plan on graduate work, and faculty are often more interested in these kinds of students. Admissions offices are in the best position to assess the characteristics of entering students from year to year.

It has been found in several studies at the Center that among students of uniformly high academic ability there are large variations in other personality characteristics. For example, there are variations in impulse expression and control. Concerning variations on this dimension, it was suggested by a colleague at Vassar that if the entering classes at Vassar, on one hand, and at Sarah Lawrence and Bennington, on the other, were interchanged for a few years, the characteristics of the colleges would change markedly. I believe he was correct in this supposition, but no such experiment has been carried out. It is also interesting, and perhaps more practical, to wonder what would happen if faculties of these kinds of institutions were exchanged for a few years; instructors might then learn a great deal more about the functioning of diverse kinds of students.

Admissions research extends well beyond the more obvious functions of improving selection. Selection is initially very complicated, especially because it is markedly affected by self-selection among the potential applicants. But admissions policy may also affect the public image of the college, so that the characteristics of the applicants change. For example, "easy" admissions reputation is quickly appreciated nowadays by youngsters who need to find a college that is not difficult.

A question now under consideration by many admissions personnel is the retention of students, especially those of high promise. At some of the leading institutions the brightest students withdraw, which is cause for concern. It is likely that about half the variance of "withdraw-remain" is predictable variance, that is, could be associated with data at the time of entrance. A pertinent research question is, of course, "What data?" Such data might well include attitudes toward college generally, or toward the admitting institution. To judge from studies by Iffert, Knoell, and others, the motives for withdrawal from college are not easily identified, even by the students themselves.

It seems nowadays that the work of admissions committees is made much more difficult by the vagueness of the goals or aims of the colleges. Clearly if no institutional goals exist, then there can be no admissions policy, for the central question must always remain, "Admission for what?" Otherwise no criteria of "success" in college will be known. There are cases where the best alternative for a student's own growth is either to leave college for a time, or else to transfer to a different kind of college. Withdrawal might be added to the list of criteria of success, but only after we learn more than we know now (and probably only after a rather complete reindoctrination of the budget committees of boards of trustees!).

A rational solution to the problem of retention may eventually be worked out. We can imagine a time when colleges will play a more active and helpful role in exchanging students, or in retiring them to the side lines for a while for their own good. In the meantime offices of admissions can hardly fail to become interested in the problems of the goals of the college in relation to the persistence of its students.

Admissions officers sometimes carry out service-oriented research that has a strong influence upon the faculty. For example, in one case the admissions director was worried by the fact that although the entering freshmen had increased greatly in scholastic aptitude over the past three or four years, the retention rate had remained as low as ever. A careful presentation of the facts at a faculty meeting resulted, not only in the formation of a faculty committee invested with greater than average power, but also in a large amount of discussion of the true aims of the college. During the last two years there has been a slight change in the character of the college, which, on the basis of recent interviews with senior students, I would say could affect future policy and practice as far as withdrawals are concerned.

Admissions offices should therefore have several kinds of research function. They should not only know something of the characteristics of entering students, but also what happens to them later. This may involve a certain amount of "social bookkeeping" before pertinent research questions can be asked. In the Lazarsfeld reports, social bookkeeping is derogated only insofar as it is confused with new research -- in fact, it is otherwise praised as "extremely important."

More Immediate Problems of Studying Educational Growth

Operations research as recommended by Blackwell (1962) of Florida State University, cannot occur without a stream of data on the characteristics of the organizational processes. In a college these are educational processes, and there should be more feedback than is now customary. We are improving the measurement of changes that take place in students during college, including aspects of growth other than the usual cognitive ones. Eventually more or less continuous observations of students in domains other than academic achievement may be helpful in their education, even in large institutions. When this is easily possible, an admissions office can receive successive reports on multiple aspects of student change or growth, and the criteria of success or failure can then be both more flexible and more realistic.

However, there are challenging problems for those who are concerned with the study of educational growth -- whether in academic or other terms -- and we will examine some of them briefly.

Changes in the Individual Versus Those for the Group

It is obvious that college seniors have changed in various ways by comparison with what they were like when they were entering freshmen. Furthermore, it is quite apparent that some students change more than others during college. How amenable are such changes to measurement? It is technically feasible to measure nearly all changes of a degree sufficient to be noticeable to a counselor, and to do this with known precision, either by use of certain kinds of mental tests, or else by other means that provide systematic observations of behavior.

As one example, a characteristic of interest at the Center is known as Thinking Introversion. It is now measured by scores on a test containing items that express an interest in abstract thought, a liking for reflection and for problem solving for its own sake. There are some large changes in Thinking Introversion scores during the first year of college. We can immediately ask whether changes in mean scores for groups of students are significant.

It was necessary to derive an exact test of significance for change, as inferred from test-retest scores, within one individual. This statistical test treats the administration of a test item as an independent measurement trial, and it uses an estimate of measurement error variance based on the trials of both occasions. (The independence assumption can be tested.) The test allows for the fact that some movement in scores is necessarily a function of the location of the initial score; at the same time the unreliability, or lack of precision of the measurement, is taken into account.

The first finding for students attending four colleges is that there are many individuals in each college for whom there are significant gains on Thinking Introversion, but that there are also a few others for whom there is a significant loss on this characteristic. If we note only large changes, say of 15 or more points (on this scale of 60 items), which happen to be significant for the individual at about the .01 level, then around 10 per cent of the 800 students have gains and 1 per cent losses, during this first year at college. When we work at a less stringent level of significance, many more losses and gains are detectable. When we examine changes on numerous measures, they appear to differ from one college to another; it is possible to interpret such variation.

Several questions of importance arise when we measure change in this fashion. First, because the change is not independent of the initial scores, some entering students are destined to change, just as others are not, because of their personality functioning at the time of entrance. Second, when we study mean changes for groups of students, we have to be especially careful because a number of students who decrease in score will to some extent cancel out the effect of the increases made by others; furthermore, the questions asked about groups are not answered simply by using averages of the results for individuals -- the standard errors turn out to be more complicated than this.

It is interesting that at least two parameters are needed to understand the changes, one reflecting the degree of relative change among group members, and the other their average change. Although estimates of both these parameters have appeared in regression equations for predicting true from observed change, they have not been well understood by psychologists who have attempted to measure change.

Third, how can we say with confidence that student A changed more (or less) than student B? At present this seems a bit like the problem of comparing two t ratios to see if they differ significantly, and I am not aware of exact or unequivocal answers to this kind of question. The problem seems to be aggravated by the absence of test score scales that are stronger than a partial, or weak, ordering.

Shall We Ascribe Causes to Change?

A century ago all scientific thinking was cast in a simple deterministic framework. Everything had a cause and was in turn an effect that could cause other events. The following partly hypothetical experiment suggests some difficulties that arise in attempting to apply this kind of thinking.

A psychologist obtained a large number of observations on students before they entered college and later, after the subjects had graduated, used these initial observations to account for 75 per cent of the variation in the college's "productivity-index," a variate such as "Does obtain Ph.D. - Does not obtain Ph.D." While the same students were juniors, however, another psychologist, unknown to the first, also obtained some data from them and later also accounted for 74 per cent of the variance of the same productivity-index. Now one result of these experiments, if they were later combined, would surely be incorrect, namely, that 149 per cent of the variance of this index could be accounted for by the antecedent events!

Some reasons why such a conclusion is ordinarily believed to lack meaning are found in a recently developed part of mathematical statistics known as "stochastic processes." Briefly, according to this view the two sets of data can not have been independent, despite the failure of the two psychologists to confer with each other. The two sets of data were at least connected by the fact that they concerned common subjects. Even though the two experimenters may have avoided "biasing" each other's designs, their aversion for cooperation (or possible for computing serial correlations!)

could ultimately lead their college astray in attempts to interpret all the data available.

A more modern scientific view is to avoid ascribing simple causation to any event. The contemporary substitute, if there is one, for the doctrine of causation is to view all events as mutual contingencies that exist within a functional network or field. The time parameter has been integrated into the field, too, so that it is no longer predominantly important. "Prediction" then recedes in importance by comparison with "understanding." In case this idea seems a bit far-fetched, it might be recalled that the usual Pearson multiple regression equation does not require that the independent variables be antecedents of the dependent variable, but only that there be a mutual correlation structure among some of the variables. There is nothing in the derivation that assumes causation. If we choose to interpret such an equation as implying a causation relationship between a dependent variable and a composite of other measures, then we do so at our own peril.

But what shall we say, then, about the "effects" of college? A preliminary interpretation is a correct one: the student, who has a potential for education, exists. This potential is a very large number of contingent events, some of which are still reverberating in him as the "result" of childhood experience, others of which are about to be experienced for the "first" time in college. But the time parameter here is not especially important, by comparison with the total set of contingencies. The usefulness of this view has been borne out by experience, and the latest education research emphasizes, more than ever before, the need for "Individualizing Instruction" (Henry, 1962). Increasingly colleges are appraising the diversity among their students with a view toward a congruent diversification of their programs, in order to enhance the educational opportunities for individuals wherever it is possible.

How Much Analysis is Required in Developmental Research?

Under this topic perhaps it should first be mentioned that by contrast with other sciences, social science has performed very few analyses of data. At least that is the impression received every time I talk to a professional programmer of large computers. These specialists remind us that in physical research a large amount of effort and money are spent in fitting a variety of rather simple data to very complicated, or perhaps very detailed, models. But that we social scientists, who must strive to understand much more complicated phenomena, spend disproportionately little, either in time or in money, in fitting models that are very likely far too simple in the first place!

Surely one role of universities should therefore be to encourage social science to "get off the ground," to encourage it to do far more data analyses than are now carried out, and to attempt this with a much wider variety of approaches. The simplest multivariate model, for example, a covariance model for discriminating two groups, must be entirely revised for use with mental test, or other fallible data (Lord, 1960); yet there seems to be a general reluctance to utilize the services of the mathematicians who could help in this kind of work.

Some social scientists have been completely taken in by the "compelling reasonableness" of one kind of model, for example, "simple structure" in factor analysis, with the result that they have tried to make nearly everything fit it. To judge from the history of sciences now better established, it is much too early to become enamoured with one, or even a few ways of looking at social science data. The interpretation of human functioning that is currently presented to us by the factor analysts does not seem realistic to me. At the same time this fascination with "simple structure" is preferable to retrogression to an earlier period when almost nothing was accomplished.

One can believe in systematic analyses of data as the essence of the scientific method without subscribing to some simple-minded doctrine, for example, positivism, determinism, or behaviorism, in which the rituals of investigation are believed to be important. A reasonable requirement of any student of human development nowadays would be that he should always have something cooking in the computer. For a great deal more analysis is certainly needed.

The Dangers Involved

Hardly a meeting of social scientists occurs today without considerable interest being expressed, sometimes in panels specific to the problem, about the effects of the "information revolution." Every day we are affected by decisions made upon the basis of information about us that is punched into cards, or read into tapes, that are in the possession of bureaucratic institutions, governments, banks, schools, and other agencies that have increasingly rapid access to large amounts of information concerning individuals.

Decisions affecting the future welfare of many persons have always had to be made, of course, by those in authority. The point to be emphasized is that the exact information upon which the decisions were made is not always fed back to the persons who are affected. And it should be. In the first place it is usually agreed that no one has the right of access to private information about another person unless he has obtained the permission of that individual. But the second point, that of a rapid feedback of decisions made, including the bases upon which they were made, is obviously even more important. Most social scientists are well acquainted with this ethic, and I agree with them when they remind themselves to practice it fully.

Furthermore, the practice of this principle will do much to safeguard against the "dehumanization" of persons by modern bureaucratic society, which worries so many thoughtful observers today. Social life goes on changing, sometimes faster than we can keep up with it, but the information revolution now affecting us appears to be like other revolutions in that it is irreversible. We must either personally withdraw from it (hardly a possibility for most of us), or else do the very best we can to lessen its adverse effects upon our lives.

In the case of the colleges, especially, personal information about students or faculty should be used with the utmost concern for their personal well-being, for our institutions of higher learning are still invested by the people with responsibilities that imply the greatest trust. We may think that education is not the answer to all problems, but the public does not know this. Possibly this is because education does offer considerable hope for the future.

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A COLLEGE ADMISSIONS MODEL[1]

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Fundamentally, the job of selecting a "successful" college class boils down to three steps:

The first of these is to define "success", or, to put it another way, to define the institution's educational policy explicitly so that it can be used to direct the types of measures utilized in the selection process. The institution's policy might set the goal simply as that of selecting those applicants most highly qualified to make good grades, to a maximum number consistent with available facilities. But frequently today the task is by no means so simple. Institutional policy, for example, may set some or all of the following as measures of the successful class:

1) it should contain only students qualified to obtain the degree being sought,

2) as many members of the class as possible should graduate with honors,

3) students should be compatible with each other, yet diverse subcultures should be represented to provide stimulation and breadth,

4) there should be a balance of leaders and followers in the extracurricular, cocurricular, and curricular activities provided on the campus.

Characteristics other than these might be substituted or added to the list, depending upon the institution. In any event, all of these criteria may be utilized in defining a "successful" class, and the first job of those responsible for admitting a class must be to specify which criteria apply to the institution, and in what quantity each characteristic is to be represented in the class.

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[1] Some of the ideas contained in this paper were introduced by the author in a paper presented at the 48th annual meeting of the American Association of Collegiate Registrars and Admissions Officers. See College and University, XXXVII, Summer 1962, pp. 485-491, passim.

The second task in admissions work is to develop procedures and measurements that will predict accurately--with validity and reliability--each of the characteristics desired. What "mix" of College Board scores, high school extracurricular patterns, and geographical representations will yield the desired outcome? For each characteristic ultimately desired, there must be found a measure that can be made at the time the applicants apply which [illegible] reflected in performance during the years when the class is attending [illegible]tion. These problems of predicting success, or the various kinds [illegible] from the credentials presented at the time of application certai[illegible] studied, though near-perfection of prediction is by no means i[illegible]

Nevertheless, prediction of some characteristics, especially grade point average, about which some institutions report being "right" seven or eight times out of ten, is sufficiently accurate to warrant our focusing some attention on the third step in the admissions process. This is the task of combining, for example, measures of academic potential and leadership qualities with data on geographic representation, and special interests so as to identify the most successful composite class from a pool of applicants. The third step is the one I should like to discuss here, even though this requires my dismissing rather peremptorily the problems involved in completing the first two steps.

The third step, then, raises the following question: How does one go about the job of defining and putting together the "most successful composite class?" The kind of question raised here is similar to that raised by the industrial production manager when he speculates about what combination of products to schedule for production in order to gain the most profit for his company. In attempting to arrive at the best solutions to such problems, industrialists and engineers recently have been employing concepts found in modern mathematics, especially those of game theory and linear programming. While the present model is not presented in terms of this type of mathematical formulation, it is conceivable that such techniques will be helpful if specific strategies are to be employed in the admissions process.

Basic Assumptions

I would like to propose an admissions system designed to cultivate the full range of talents that can be productive in all areas of study in an institution as well as allowing for talents not primarily associated with academic study. Let me attempt to clarify this particular model by isolating some of the assumptions upon which it stands. In a few cases these assumptions are based on previous writings of Dael Wolfle. Some of the strategies that follow them have been independently suggested by John Kemeny.

First, there is disparity both within and among the talents of students. While we all know that talent in one area tends to be related to talent in another, I want for the moment to emphasize the peaks and valleys of talent that any one student may have, as well as the peaks and valleys of talent existing among different students.

The second assumption is that the value to society of a student's talent is not linearly related to the amount of talent. For example, ten units of talent in physics may produce a competent, useful laboratory assistant for society. Fifty units may produce a Master or Ph.D. who can contribute small pieces of knowledge worth more than five times as much as the ten-unit man's laboratory work. One hundred units of talent in physics may produce an Einstein, whose worth to society is incalculable.

The third assumption is as follows: If, in education, we are to make the maximum possible contribution to society, then we must cultivate various talents to the utmost. We must develop each individual's talents to their maximum possible degree. Therefore, we must have broad definitions of what talent is so that no talent will be overlooked. We must cultivate the full range of talents that can be productive in all areas of achievement and that are necessary to a society's well-being and advancement.

Fourth, from an educational institution's point of view, there are often traditions and goals which are in conflict with admissions procedures defined solely in terms of present day measures of academic talent. I do not wish to argue the merits or demerits of this assumption. It is made merely to inject an element of realism into the model.

Fifth, from the institutional point of view, there must be more than one qualified applicant for each place in the freshman class. That is, there must be some opportunity to exercise selectivity in admissions. However, if this assumption does not hold, I believe the model still has implications for the placement of students in an appropriate curriculum and the development of appropriate curricula.

An Illustrative Admissions Program

To illustrate how an admissions program predicated on these assumptions might be implemented, let us first specify that a given institution has 3,000 applicants. Of this number, 2,000 are "qualified." A qualified candidate may be defined differentially at different institutions, depending in part upon the kinds of talent the particular institution sets out to develop and in part upon the amount and kind of error the institution is willing to tolerate. For example, a qualified candidate in one institution may be defined as a student who has a fifty-fifty chance of a C average in the program to which he is admitted, where the prediction of grade average is 75 per cent correct. Another institution may want to be more conservative in its definition of qualified and it may demand a 70-30 chance for a C average. In any event, there are current measures which will allow us to set qualifications with reasonable accuracy for the protection of both student and institution. Let us assume that our hypothetical institution sets its standards so as to give a yield of 2,000 qualified candidates from a total of 3,000 applicants and 1,000 candidates would be informed that they did not meet minimum standards. Thus our college which has resources for only 1,000 students, now has the problem of selecting one out of every two remaining candidates.

In line with the assumptions previously presented, it is the educational institution's first responsibility to train the academically talented student. Our first decision, then, is to define the proportion of the class to be admitted on this basis. For purposes of argument, let us assume that the figure has been set at 75 per cent, meaning that there will be 750 students selected on the basis of their academic talent from the 2,000 qualified candidates. Keeping in mind the principle of seeking intellectual diversity, I would propose here that each academic department be assigned a quota in keeping with its facilities. The applicants would then be listed in order in accordance with their abilities for work in a particular department, and the departments would fill their quotas by selecting students from these lists. As mentioned previously, talent in one area is often associated with talent in another. Therefore, it is to be expected that frequently a student would be drawn by more than one department. There would be a need to make rectifications to the various departments which lost students of multiple talents; but replacements could be made to fill out each departmental quota from its own lists in order to assure maximum diversity in selection.

Once the 750 students to be selected by this procedure were drawn, the remaining 1,250 qualified applicants would be grouped according to one or more of a number of different criteria and quotas similarly assigned for drawing students from these groupings. For example, athletic prospects would be grouped together and the athletic department would select its 50 best prospects. The alumni association would be given 50 selections from students not previously included. Fifty candidates could be selected from cases where alumni or boards of trustees had requested special consideration. Fifty more cases might be chosen to insure geographic representation. Last but not least, the admissions office might be allowed 50 cases a year for experimental purposes.

Utility of the Proposed Model

A strategy such as the one proposed here would allow an institution to approach its selection of students with a view to achieving diversity of talent and meeting its obligation to develop diverse talents. At the same time, the strategy would allow the institution to continue its traditions and to further goals not necessarily associated solely with academic skills.

It is true that many of the students selected by these procedures also would have been selected under other more simply or more narrowly defined systems. If this strategy served to broaden our view and improve talent development only by 15 to 20 per cent, however, it would, I believe, still be very much worthwhile. It must be granted that today we may not be able to differentiate talent so accurately as the proposed system requires. But would not a procedure such as this make a starting point for learning more about the extent to which we can differentiate now and the means of improving our ability to differentiate in the future? There needs to be some systematic basis for the selection process, viewed against the need to maximize talent development, in order to provide an opportunity for study of the selection and placement of students in educational institutions and academic programs. The proposed strategy also might well provide a basis for studying how educational environments are influenced and shaped by the students as well as the selective techniques of the faculty and other administrative officers.

It appears also that if we were better able to communicate systematically to our friends in the secondary schools the nature of the selection process for college, then we might better be able to gain added assistance from them in the proper matching of student and program. For example, the systems used in different institutions might be stored in a common language in a common computer. Using this body of resource information, the school counselor might well be able to improve his diagnosis concerning each candidate's college prospects. The counselor could bring the characteristics of his students to the computer (or giant library resource) and ask questions about which colleges have programs providing the most appropriate opportunities for each student. The procedure would be similar to the growing practice whereby a physician may bring a set of his patient's symptoms to a computer and have the computer's memory searched for a suggested diagnosis.

A Larger View

The model briefly described in this paper represents a way of viewing college admissions. In some respects it perhaps describes what some institutions are currently doing. It does not represent a cure for all the problems of all the admissions offices.

Four points emerge as basic:

One: This model does not refine our ability to predict talent in the diverse areas of study represented in our educational institutions. It does, however, focus attention on the necessity to do so.

Two: The educational goals of an institution should be defined more explicitly, in order that these definitions may be used to guide the selection process and evaluate its outcome.

Three: We need to broaden our view of the talent that exists among students in order to insure that we can define with reasonable accuracy how the selection process proceeds. If we continue to select students within ever narrowing ranges on a few measures we will be making meaningless distinctions, with a consequent inability to communicate our selection procedures.

Four: We need to broaden our view of the selection process in order to insure that the full range of talent that an institution is capable of developing is properly represented in the student body.

PART II

CONCOMITANTS OF INCREASING SELECTIVITY IN COLLEGE ADMISSIONS

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A DEAN OF STUDENTS LOOKS AT COLLEGE ADMISSIONS

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I have often thought that outside of college presidents, no one in college work has more miseries than the Dean of Students. However, as I reflect on the role of the admissions officer, I realize that he might well claim the "most maligned" title. Almost daily he wears the hat of devil or hero, depending upon who evaluates his decisions. Parents, college-bound high school seniors, alumni, faculty, trustees, high school principals ad infinitum are all willing to tell him how to do his job. His failure to admit the son of an alumnus (CEEB scores in the 200's, ranked 231 in a class of 232); his failure to produce as many would-be engineers as called for by the Dean of the Engineering College; his failure to find enough applicants whose fathers are presidents of large oil companies, (independent of academic qualifications -- of course they are admissable in the interest of diversity); his failure to admit the proper quota of left-handed quarterbacks, 230 lb. linemen and 6'8" devotees of the Naismith pastime; his failure to admit only future Phi Betas, who plan to major in English Literature; and from the point of view of the undergraduate male population his failure to admit only coeds with 36-24-36 measurements who were finalists in the Miss Universe contest -- yes, these failures frequently cast him in a difficult role.

You and I know, however, that for the most part our admissions officers are doing a superb job. When we recall that there are approximately 2,000 institutions offering work beyond high school -- with extreme diversity in regard to size, objectives, standards of admission, quality of program, wealth, sponsorship (private, state, religious), etc., and further recall that approximately 4,000,000 students populate these institutions -- then we can be thankful that our admissions officers do as good a job as they do. Most of them play a numbers game that makes the job of a racetrack oddsmaker easy by comparison. It has been said that admission to college has become an intellectual Bingo game with the winners determined by intellectronic gadgets. The modern admissions officer, after a careful study of College Board scores, high school grades, recommendations -- all properly blended with some intuitive skills acquired over the years, "admits" what he hopes will be the best class ever. He can then sit back and place himself at the mercy of the unpredictable 17 and 18 year olds!

Six months ago (which, in Rochester, New York, corresponds with the season of ice-skating, skiing, snow treads, etc.), I readily accepted an invitation to participate in the Nashville Conference on Research Related to Admissions. The topic "A Dean of Students Looks at College Admissions" seemed fine. It would provide sufficient latitude to expound on whatever aspect of the problem appealed most to me. It wasn't until I received the first draft of the Conference program and perused the topics assigned to the other speakers that I realized the depth of my personal dilemma. For prior to my presentation the Conference would have been brought up to date on the following aspects of admissions:

Factors to Consider in Policy-Making
Trends in College Going and Admission Practices
Study of College Environment and Implications for Admission
Educational Growth of College Students
Evaluating the Applicant - (Academic - Personal - Social)
New Model for College Admissions
Selectivity and Institutional Standards
Transfer Student - Problem of Evaluating Previous Work
Non-Intellective Factors and Student Performance
Plus discussion periods liberally intermixed.

Now after these topics have been given the once-over with a fine comb and brush, just what the hell is there left to reflect on? I wasn't sure there was much, if anything left to look at -- but I was reminded that Joe Nyquist, Deputy Commissioner of Education for New York State, has recently said that a Dean of Students, like an Admissions Officer, "must be willing to make compromises for a living; he should always have more answers than questions; he must have an unusual facility for making a problem out of every solution; and since he shoots from the lip, he should be quick on the flaw." Thus, not to be denied, I come before you to speak about that with which I am most familiar -- namely, the way one institution perceives its role in higher education and the extent to which its admission procedures are consistent with its purpose and objectives.

General Background

As background to the Rochester story, may I share with you some widely accepted generalizations about American higher education and admissions practices:

First, Benno G. Fricke (1958), Evaluation and Examination Division of the University of Michigan reminds us that "research over a period of many years has shown that colleges in this country differ markedly with respect to the quality or ability level of freshmen they enroll," calling attention to the Traxler study of 1937 which reports a range in average IQ from 94 to 123 for the

323 colleges in the norm group for the American Council on Education Psychological Examination. McConnell and Heist (1962) call attention to the 1952 ACE psychological examination data for 60,539 students in 200 colleges in which mean score was 104.4 with a standard deviation of 27.1 and included a range of mean scores from 37.5 to 142.2 -- a spread of approximately four standard deviations. The first and 92nd percentiles are equivalent to mean scores of the two extreme schools.

Second, both of the above studies call attention to the diversity that typically exists within any one college. On the academic ability scale some students in colleges with low mean scores overlap some students in colleges with very high mean scores. The fact that such overlap exists between the populations of colleges that would appear to be extremely dissimilar, raises interesting questions. Should high school counselors or admissions officers or college advisers attempt to redirect students at the extremes? Would greater homogeneity make for a better or worse academic environment? Whatever our answers, our belief in the individual's freedom to choose probably makes it difficult to alter the picture markedly. Perhaps of more importance, is the extent to which any college or university understands the general level and extent of diversity of a student body and offers an educational program from which most students can expect reasonable return for the dollar invested.

Third, we are daily reminded of the high attrition rate of college students in general. Although attrition rates for individual colleges vary tremendously, it is estimated that approximately half of the national entering class for each year fail to graduate. With many state supported schools, the high attrition reflects the conflict between a belief that "everyone deserves a chance" and the equally strong belief that a faculty deserves "the right to select."

Fourth, there is voluminous evidence to demonstrate the extent to which success in college (as defined by grades) is predicted by performance on academic aptitude and other achievement variables. However, the search for other correlates of success has been much less fruitful.

And, finally, admissions practices of American colleges fall roughly into three categories which Bowles (1956) describes as:

(a) Open admission on simple fulfillment of minimum stated requirements (often graduation from high school),

(b) Selective admission involving a rejection of the unfit or unqualified,

(c) Competitive admission involving selection from among an abundance of highly qualified candidates.

Most American colleges fall in category (a) or (b) and many are in transition, especially as the "flood" approaches in 1964.

The above generalizations have implications for all colleges -- the University of Rochester included. We think we are different from others -- better than many, but perhaps not as good as some; we know we have diversity of many kinds -- and yet we hope for a Rochester type; attrition we have -- modest, relative to many and yet higher than we want; our predictive studies have been helpful in admitting and counseling and yet leave many questions unanswered; and we probably are best classified as a college applying competitive admission practices to most applicants, but using selective practices for some (faculty children, non-resident local applicants, occasional sons and daughters of alumni, trustees, friends of the University, etc.).

Where have we been? Where are we going? What about admissions? What problems do we have that may be common to other colleges?

The University of Rochester Story

The University of Rochester is a privately endowed, non-sectarian, co-educational institution. It was founded in 1850 and in August 1962 announced the appointment of its sixth president, W. Allen Wallis. To Rush Rhees, president from 1900-1935, the University is indebted for his persistence in winning the favor of George Eastman (founder of Eastman Kodak). Eastman's gifts made possible the establishment of the School of Medicine and Dentistry, the Eastman School of Music, and the development of the River Campus. Much of the University's current endowment of 85 million is attributable to Eastman's generosity. From 1930-1954 the University operated coordinate Colleges of Men (River Campus) and Women (Prince, or old campus), separated by four miles. Under Alan Valentine, president from 1935-1950, the University continued to grow in stature (though size remained stable). The Honors Program was introduced, an Institute of Optics was established, (the only one of its kind in a private University), and the programs in music, medicine and arts were strengthened.

The deKiewiet decade (Cornelis deKiewiet served as president during 1951-1961), can best be described as an attempt to create a new image -- a transition from the "private liberal arts, small college" image to a "university - small, but with national recognition," image. History will probably judge that he retired before his dream was fully realized but the thrust he provided ultimately led to the shaping of a new University.

In quick summary, deKiewiet's plan for reshaping the image of the University of Rochester involved: 1) merging the men and women's college to create one co-educational campus, 2) creation of new professional schools of engineering, business, and education, but retaining the College of Arts and Sciences as the heart and core of the River Campus, 3) strengthening the faculty by new appointments and a program to double faculty salaries over a ten-year period (on schedule at the end of six years), 4) extending the University's graduate and research programs and, 5) embarking upon a growth (size of student population) program. That this program demanded money is attested to by the $14,000,000 budget for 1953-54 as compared with the $35 million spent in 1961-62.

The fact that the program involved growth -- controlled relative to rate and quality -- had direct implications on the policies and practices of admissions and student personnel service. May I focus on this aspect of the Rochester story for a few moments.

After two years of careful planning, a faculty committee issued a report in 1954 which called for a ten-year increase in undergraduate enrollment on the merged co-educational River Campus from 1400 to 2500. Quality was not to be sacrificed in the interest of size. Projected enrollments for successive years from 1954 to 1968 are shown in Table 1. The size of each entering class was projected as well as an estimate of the minimum-maximum total enrollment. The column labelled "Minimum Demand: Men" was based on population studies of those communities providing the bulk of male applicants. It represents a conservative estimate of the smallest number of male acceptances we might expect for each year with quality of applicant maintained and with no change in Rochester's appeal to the high school graduate. For each year the two figures in parentheses permit a comparison between plan and reality. For the last five consecutive years the size of each entering class has been within ten students or less of the projected goal. And furthermore, in some of these years, the goal was adjusted. For example, the 1961-62 goal was cut back to 660. Since 1955-56 the average annual error is approximately a +3 -- three more students per year than the plan of 1954 called for. This is not bad -- assuming quality held -- and there is evidence in Table 2 which suggests that quality was actually improved.

In the first place, the number of applications processed each year has increased at a rate consistent with the projected growth figures. During the last five years about 12,000 applications have been processed to admit about 3,000 students -- roughly one out of four, with the rate for women being about one out of five and for men about one out of three. Although these ratios have remained relatively constant in recent years, the quality of all applicants has shown steady improvement as reflected by both college board mean scores and high school rank data. The class of 1965, admitted in September 1962, for the first time in the history of the University had average scores above 600 for men and women on both the CEEB Verbal and Mathematics tests. Also, there is a favorable trend relative to the per cent of each entering class who fall in the top fifth of their high school class. Thus, it appears that to date the University of Rochester's plan to increase the size of its undergraduate population has been carried out by the admissions staff with no compromise in respect to quality.

Also, it is interesting to note slight trends toward broader geographical distribution. About half of each entering class came from New York State outside of the Rochester area. In recent years the per cent coming from outside

Table 1

PROJECTED INSTITUTIONAL ENROLLMENT, 1954-69

Academic Year	Minimum Demand: Men	Entering Freshmen Men	Women	Total	Total Enrollment Min.	Max.
1954-55	300	268	165	433 (510)	1,490	(1,499)
55-56	306	310	230	540 (568)	1,580 - 1,620	(1,680)
56-57	321	320	200	520 (501)	1,650 - 1,700	(1,750)
57-58	324	330	200	530 (548)	1,720 - 1,760	(1,825)
58-59	342	345	225	570 (572)	1,840 - 1,880	(1,961)
59-60	379	375	240	615 (616)	1,910 - 1,960	(2,025)
60-61	441	425	230	655 (650)	2,030 - 2,080	(2,167)
61-62	465	440	230	670 (660)	2,140 - 2,200	(2,310)
62-63	444	440	230	670 (675)	2,190 - 2,250	(?)
63-64	459	440	230	670	2,240 - 2,300	
64-65	543	510	230	740	2,350 - 2,410	
65-66	621	575	230	805	2,480 - 2,540	
66-67	594	575	230	805	2,509 - 2,650	
67-68	600	575	230	805	2,700 - 2,760	
68-69	610	575	230	805	2,705 - 2,810	

Table 2

COMPARATIVE ADMISSIONS DATA

	Class of 65	Class of 64	Class of 63	Class of 62	Class of 61
No. of Applications Processed	2652	2798	2343	2099	1911
Admissions					
Men	432	430	388	336	347
Women	228	220	228	236	201
Total	660	650	616	572	548
College Board Aptitude*					
Verbal - Men	603	576	573	559	561
Women	643	615	612	580	564
Mathematical - Men	643	638	632	618	610
Women	627	601	604	567	554
High School Rank					
Top Fifth	84%	82%	81%	82%	78%
2nd Fifth	11%	13%	15%	14%	17%
Geographical Distribution					
Rochester Area	22%	20%	26%	24%	28%
N.Y. State outside Roch.	52%	50%	54%	57%	51%
Out of State	26%	30%	20%	19%	21%
Degree Distribution					
AB	61%	64%	61%	56%	56%
BS	39%	36%	39%	44%	44%

* College board aptitude tests are standardized with a mean score of 500, based on students applying to four-year colleges. A score of 600 may be thought of as a point on the score scale such that 16 per cent are above and 84 per cent below 600.

of New York State has increased slightly, while the per cent of Rochester area students has decreased. In the fall of 1962 a community college will admit its first class. Thus, the number of local students admitted to the University as freshmen will probably continue to decrease and the per cent of out-of-state students will increase. In the past we have felt an obligation to Rochester area students who wanted to attend the University. The area student who was willing to live at home usually was admitted if he satisfied minimum admission criteria (upper half of high school class, with CEEB scores 500 or better). Some of these students will want to and will be encouraged to attend the community college. At the same time some local students who satisfy the competitive admission criteria (high college boards, high position in class, strong recommendation, etc.) for financial reasons will spend a year or two in the community college and then transfer to the University of Rochester or an out-of-town university. In other words, a few students, who in the past would live at home and attend the University of Rochester for four years, in the future will attend the community college for two years and spend the final two years in a college or university away from home. The net effect will be a continued decrease in the number of students in each entering class who reside in the local area. The University regards the community college as good for both the community and the University and has cooperated fully in the establishment of a sound college.

Over the past nine years the work of the admissions staff at the University appears to be consistent with the goal provided by the faculty in 1953. Freshman class quotas have been met, quality criteria have been maintained and improved, geographical distribution is broadening and the distribution between men and women fits the projections (to the delight of admitted women). Disappointing, but not surprising, has been our failure to admit as many engineering students as the very dynamic dean of the College of Engineering had hoped for. However, this is a national phenomenon and I do not expect a significant change in the number of potential engineers until 1964 when the higher birth rates of 1948-49 will be felt. Also, to those of you who were not familiar with the University of Rochester, it probably is apparent that we are not a municipal college as our name might imply (80 per cent out-of-area and 85 per cent living in University residence facilities).

What Happens After Admission?

At this time I would like to focus attention on what happens to students after they are admitted to the University of Rochester, to discuss some of the studies we have conducted and to mention a few problems that concern us and are probably common to most colleges.

Returning to Table 1 you will note that the projected total enrollments turned out to be conservative from the first year on. To date we are about 100 students ahead of schedule. Favorable retention rates account for most of this error and I must confess we are not troubled to be off schedule. In recent years we have graduated approximately 80 students for every 100 admitted in the freshman class. Behind this record is a University credo which might be crudely stated as:"We believe that all students admitted to this University are capable of completing a degree program. We believe our job is to provide for them a rigorous and full exposure to the humanities, social sciences, and natural sciences, with opportunity to study intensively in a field of their choice. More should be demanded of them than they have experienced in the past. As a consequence, we must be ready to help some make the adjustments initially demanded; but independent, mature self-direction must sooner, rather than later, be expected of them."

To implement this philosophy President deKiewiet instituted a program of student personnel services which centers in one administrative office responsibility for coordinating, with respect to student and faculty interests, the academic and non-academic phases of its collegiate program. A serious attempt has been made to avoid the cleavage which exists on many college campuses with respect to administrative responsibility for in-class and out-of-class aspects of a student's life.

The program of faculty advising, approval of programs of instruction, review of academic performance (dean's list, warning, probation, drop) are administered by the office of the Dean of Students as well as the usual programs of residence, student government, fraternities and sororities, etc.

The bulk of our service efforts are concentrated at the freshman year including a reasonably effective faculty advising program supported by a $25,000 annual budget for extra compensation and student entertainment, a strong residence hall advisory program which cultivates respect for academic achievement, a voluntary reading-study skills program and outstanding counseling and psychiatric services. Over the years we have been fairly successful in establishing among students a recognition that using the psychiatric services is not ipso facto a sign of mental illness. Most students recognize the psychiatrist in our student health service as a person who functions primarily at the diagnostic level and who is well qualified to help him understand some of the factors associated with what we often call "adolescent turmoil" -- a condition experienced by most college age youths, with the degree of torment being the main distinguishing variable. Although there are many exceptions among individual faculty members (lest I create the impression of complete and blissful harmony), we do not subscribe to the "sink or swim" philosophy of treating college students -- at least not during the freshman year. Hopefully, we supply enough assistance to avoid the tragic errors, at the same time that we provide freedom to err as a means of learning.

Increased Selectivity and Institutional Standards

The fact that 85 per cent of the grades earned by freshmen are C or better, and that one third of all students are on Dean's List (B average or better) provides a basis for speculation. The hypothesis that the faculty at the University of Rochester is soft and generous with their grades, I prefer to reject as an explanation for this phenomenon. Of much greater appeal is the hypothesis that the faculty recognizes the student body as carefully selected and talented. As a consequence, they demand and receive academic performance commensurate with potential. Obviously, the latter condition is not true of all faculty members or of all students. Nor is it equally true from department to department within the University. In support of the assumption that in general Rochester students approach their academic responsibilities seriously and the faculty respect the quality of the student body may I quote from a news account which appeared in the Union-Star, dateline November 7, 1961, of what may be unique in the history of student demonstrations -- a rally focused on a University's academic goals.

ONE OUT OF THREE 'ADULT'

> Leave it to the college students to provide some relief from the humdrum of campaign speeches and discussion of proposed amendments to the New York state constitution. In at least three schools the boys and girls-mostly boys-have 'made news.'
>
> Authorities at St. Bonaventure in Western New York vetoed a stunt in which it was planned to stuff 220 young men into a 10 by 15 by 8 foot dormitory room to 'break' the college human sardine record. At the University of Virginia there was a protest against cutting the Thanksgiving holiday or recess. At the University of Rochester a student mass meeting voiced complaints over such things as overcrowded classrooms, indifferent graduate assistants and professors preoccupied with research to the detriment of teaching.
>
> The most refreshing part of the three stories is that at the University of Rochester the undergraduates were able and willing to focus their minds on the basic quality of education, not a childish stunt or not as much 'time off' as has been traditional. The Rochester boys and girls may be right or wrong -- we, of course, don't know -- but at least they acted adult. And they'll get an adult hearing of their complaints.

The impact of the Rally has been tremendous. In my estimation the students, in an orderly way, were saying, "Look, we know we are in a good University. The things we've been hearing about more research, new and improved graduate programs, 50 million dollar development programs, high-powered faculty -- all these things are probably good for the University. But don't forget us -- the lowly undergraduates -- we want our fair share of the choice fruits from the academic tree." As the youngest member of the academic family they felt neglected and cried out for attention -- which, incidentally, they have received. Happily, the faculty did not shrug off the protesting voice as a collegiate prank. Instead, they sat down with responsible student delegates, separated out the real from imagined complaints and worked cooperatively to improve conditions. A large mathematics class was split into three smaller sections (to the mutual relief of students and professor), a re-evaluation of the freshman year curriculum took place with several changes, including plans for some experimental small group preceptorial classes to be offered this year, and significantly, the students, through editorials and open discussion meetings, reminded themselves of their responsibilities in the learning process, i.e., -- class attendance, work in on time, intelligent participation in class, basic academic honesty, etc. Several ideas for better communication were accepted. A special issue of the campus newspaper is being mailed to students and faculty this week. New programs, faculty appointments and other items relating to the academic character of the River Campus are included. Every department now has a faculty-student liaison committee in order that academic matters of mutual concern can be considered easily.

It is my belief that the things mentioned above happened only because the faculty and students respected one another. If it had been otherwise, the students would have expressed themselves in the more typical fashion of riots and panty raids and likewise, the faculty would have labelled them as "immature, thrill-seeking adolescents."

I can only conclude that the bulk of our students are academically mature. This type of conclusion is consistent with other evidence. For example, we drop for academic reason less than 4 per cent of each freshman class and only 3 per cent of the entire student body. There are four students on Dean's List for every one on academic action and we have few voluntary withdrawals (only about 4 per cent of the total enrollment in 1961-62). In general, these data compare favorably with the national picture.

However, during a recent seven-year period there were 1154 who left the University before completing a degree program. True, many are readmitted and finish a program but there are at least 20 out of every 100 entering students that do not fulfill our prediction of "capable of completing a degree program." That this is better than the 50 per cent national picture provides little comfort.

Contribution of Research

One of the major tasks confronting us is to understand better the characteristics that differentiate "successful" from "unsuccessful" students and in this connection I want to refer briefly to a research project which I recently completed. This project involved, among other things, a comparison of the characteristics of men who completed a degree program and those who withdrew from the University during a recent six-year period, with particular attention to the fields of concentration in which they were enrolled and the extent, nature, and possible consequences of changes in fields of concentration.

Measures of abilities, interests, achievement, and personality traits were available for some 1601 cases, including a withdrawal sample "unsuccessful" of 456 cases and a "successful" group (graduates of the University of Rochester) of 1145 cases.

Among the findings which are of interest were the following:

1) Academic difficulty is the major reason for withdrawal as shown on college records. However, factors other than lack of ability apparently are related to withdrawal decisions.

2) Withdrawal cases are, more often than not (58 per cent), at time of withdrawal, majors in Pure Science, Technical or General Science curricula.

3) Men who withdraw from college obtain lower scores on the academic variables than do successful degree candidates. The differences are not as great as might be expected, and moreover the withdrawal sample includes many cases of men with very high academic scores.

4) The interest, personality and mechanical comprehension test scores for all men who withdraw from college are similar to the test scores for all men who obtained a degree. However, differences in test scores exist between men who obtain a degree in a given field and men who are registered in the same field at the time of withdrawal.

5) More than two fifths of "successful" men changed fields at least one time prior to graduation. Men who withdraw from college make similar, but fewer, changes among fields of concentration than do men who earn a degree at the University of Rochester.

6) In general, the men who withdraw from college do not follow the pattern of change in field of concentration characteristic of the men who successfully complete the requirements for a degree at the University of Rochester (due, in part, to the fact that they terminate their stay at the University sooner).

These findings suggest that many of the withdrawal group might have been better off to change their field /from Pure Science, Technical and General Science (pre-meds) to English, History, or Psychology/. If it is added that only 84 of the 456 men in the withdrawal sample were in a field in which they were quite similar to successful candidates (in terms of measured abilities, interests and personality traits) this suggestion is reinforced.[1]

Thus, at the University of Rochester men who withdrew, either voluntarily or by drop action, more often than not are in fields in which they are dissimilar to successful candidates. Also they have made fewer curriculum changes than successful candidates and consequently may have missed a more compatible field.

Why this happens still remains to be answered. A few of my favorite hypotheses are:

1) Some men have firm, but unrealistic objectives. More often than not they aspire to be engineers, doctors, scientists -- those occupations that might be called the "glamorized trio." These men might find humanities, social sciences and business fields more compatible -- and if they could accept a change, it is highly probable that they would succeed academically. They are the "I'll be an engineer or bust" type of man, who more often than not busts.

   Attempts to analyze why these men are so persistent in their objectives frequently uncover problems of insecurity, outside pressure from parents and relatives and severe cases of immaturity.

2) A second pet theory of mine is that most college bound youth in American society are denied one of the most important freedoms of their young lives -- namely, the freedom to decide whether or not they will attend college. True they spend much time deciding which college they will attend -- but the right to decide whether they will attend college has often been usurped by parents, friends, and teachers who harp so much about "getting ready for college" that the individual boy or girl of today often never faces the question "Why go to college?" The "adolescent turmoil" I referred to previously is often brought on when the college student, for the first time in his life, begins to reflect seriously about himself and the world about him. His complete lack of practice in this type of serious inquiry often causes him to flounder for prolonged periods of time -- during which he is unable to cope with daily demands of college -- and as a consequence either withdraws (declares a moratorium on academic responsibility) or he is asked to leave. If attendance at college was less often described as "It's the thing to do," and more often resulted from serious consideration of long range goals in life, the rate of withdrawal might

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[1] For a comparative discussion of the findings of this study and another concerned with a similar problem see Cole, Wilson, and Tiedeman, 1962.

decrease. Considering the nature of our society this is much easier to say than to accomplish.

3) And finally I am convinced that for the last twenty five years we have been afflicted with a disease far more insidious than cancer, leukemia, heart disorders or the others on America's "ten most contributed to" list of national health menaces. In my judgment "Intellectual gaposis" deserves top billing on any list of national threats. The name of the disorder is probably foreign to you; the symptoms are familiar -- 700 CEEB scores, comfortable middle of the class ranking; attitudes reflected in statements such as "How many pages have we got to read for 'Old Man' Jones," "Can I borrow your lecture notes -- I was out on the town last night and slept through my 9 o'clock," etc.

We have a system of education that focuses undue attention on "getting ready for the next rung on the ladder" and one that is frought with artificial, extrinsic rewards -- i.e., grades, degrees, hours of credit, prizes, acceptance by the teacher, etc. It takes a very mature mind to come out of our system with a true understanding of the value of learning for learning's sake. Our youth have been conditioned to do only what "is required" of them. And unfortunately the more talented you are the less likely the school system has forced you to live up to ability. Emerson has said, "What all of us need is someone to make us do what we are capable of doing." Nor do I exclude the colleges in this mild criticism of American education. Our concern for "education for all of the children" may explain, but does not excuse, our failure to provide for the talented what their ability deserves.

"Intellectual gaposis" is still with us. However, I am encouraged because over the past five years I have seen much evidence to suggest a change in the conditions that cause the disease. Both high schools and colleges (and I honestly believe the high schools are leading the way) are modifying their curricula and improving the quality of instruction. If the upgrading movement continues we have little reason for concern. I would like to add, however, that we have no reason for complacency. We need more research designed to increase our understanding of the factors which influence adjustment to college.

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INCREASED SELECTIVITY AND INSTITUTIONAL STANDARDS[1]

Sam C. Webb
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That every, or most every selective college and university is concerned with obtaining for itself a student body of the highest quality possible is of course an obvious fact.

The term "quality" as here used could be variously defined. We might specify quality in terms of morality, athletic potential, creative potential, leadership potential, or in terms of a host of other traits; but within the context in which we are speaking, quality refers primarily to the potential of students for learning and for creating, and for such other behaviors as are rewarded by passing, and preferably, high grades. Since we usually refer to this complex of skills and behavior as academic potential, it seems safe to say that by "quality" we mean we are interested in securing students who are high in their academic or grade-getting potential.

My purpose today is not to outline procedures for obtaining high quality students, nor is it to judge the value of securing such students. Rather I shall share with you the experience of one institution in trying to obtain students of high quality, and such evaluations of the outcomes as we have made. Finally, I will point out the implications of these findings for admissions officers.

Expectations at Emory

One of the great concerns of the faculty of the Liberal Arts College at Emory has centered around the quality of its students. While the drop-out and flunk-out rates at Emory do not seem to have been excessive when compared with other schools, nevertheless the fact that we were losing for all reasons about 50 per cent of entering freshmen by the end of the sophomore year, was justifiably a matter of grave concern. If we could only raise the quality of the student body, the faculty and deans felt, many of our problems would be solved.

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[1] This report is an elaboration and extension of data previously presented. (See references.)

Unqualified students would be eliminated by a selective admissions policy. Admitted students would be more enjoyable to teach. Since there would be fewer flunk-outs, courses primarily for juniors and seniors would have greater enrollments; and this would provide more funds for faculty salaries. Since students would be passing, the need for providing counseling and remedial services would be reduced. In short, if only the quality of the student body could be up-graded, many of our problems would be solved.

In anticipation of the day when active efforts to up-grade the quality of the student body could be undertaken, we administered to the enrolled students of the freshman class of 1951, the _Scholastic Aptitude Test_ (SAT) of the CEEB along with other orientation tests on an experimental basis. This procedure was again repeated with the freshman class of 1956.

Up-Grading the Freshman Class

Serious efforts toward up-grading the freshman class began with the entering class of 1957. All applicants for that class were required to submit scores on the SAT. And making use of the well known fact that a more accurate prediction of college grades can be made by using the high school average, and the verbal and mathematical scores of the SAT in combination than by using them separately, we worked out the multiple regression equation using the data for the 1951 class. We then computed a predicted average for every applicant. After considering the size of the class to be admitted, the expected size and quality of the applicant population, and the ratio of successful to failing students at various points along the predicted grade scale, a cutting score was determined; and with few exceptions, applicants with predicted grades below this point were not admitted. Of course, high school principals' and counselors' recommendations, information from alumni, and other data were taken into account. But the predicted average has been used as the primary datum in regard to academic potential. Essentially this procedure has been followed for all subsequent classes, and as is evident in Table 1, this procedure has led to substantial "up-grading" of the student body.

Table 1

COMPARISON OF CLASS ENTERING IN 1951 AND THAT ENTERING IN 1962 WITH RESPECT TO SELECTED INDICES OF ACADEMIC POTENTIAL (EMORY UNIVERSITY)

Academic Indices	Class entering in 1951 (mean)	Class entering in 1962 (mean)
SAT-Verbal (SAT-V)	431	557
SAT-Mathematical (SAT-M)	464	584
High School Average* (HSA)	29	32
Predicted College Average* (PCA)	20	29

*High school average, predicted college average, and earned college average scales have been defined as follows: A = 40, B = 30, C = 20, D = 10, and F = 0.

Now we do not claim anything spectacular about these changes. Certainly most, if not all, colleges have experienced rising scores and HSA in entering classes in recent years. The questions of interest are, of course, "What differences have changes in the quality of the student body made in the activity of the college? What are some of the effects of these changes and how are they to be evaluated?"

How Evaluate?

There are, of course, numerous criteria in terms of which these changes in quality of students might be evaluated. For instance, one might evaluate the results in terms of the number of drop-outs. We do not have a complete record, but there is evidence to suggest the drop-out rate has fallen. The use of "drop-outs" as a criterion, however, is complicated by the increasing difficulty of transferring to another school. Similarly, one might consider the relation to emotional problems. Such an analysis is difficult to make. One gets the impression that remedial-type counseling activities have dropped off, while needs for handling emotional problems have been accentuated or created by increased academic pressure.

It seems more relevant to relate these changes to the academic standards of the college. To avoid ambiguity the term "academic standard" must be further specified. In one sense it refers to the general level at which courses of the curriculum are pitched. In another sense it refers to the quantity of work of a specified level of quality required for graduation. In still another it refers to the quality of work required for passing or for some other level of excellence. For convenience I refer to this as the grading standard. Of this last mentioned sense I will speak in detail; but in regard to the other two, it should be noted that while changes in the quantitative standards are just now beginning to be made, it is clearly evident that the curriculum is being up-graded. More students are being allowed to exempt introductory courses especially in English, math, and foreign language; and in other fields, special courses for students with high potential have been devised.

Increased Selectivity and Grading Standards

Let us now consider the grading standard in more detail. Of the several concepts of academic standard mentioned this is probably the most crucial and important, for basically it determines whether the student passes or fails.

A college's grading standard is ultimately based on the judgmental processes whereby faculty members assess the quality of a student's work and assign it a grade. Because faculty members are usually given considerable freedom in assigning grades, the judgmental processes are highly individual in nature. To obviate difficulties arising from the individuality of the grading process, I have defined the grading standard in terms of the probability of making a specified average grade for the freshman year. But the fact that college grades are usually related to the academic potential or quality of the students requires us to take the quality of the students as well as the judgments of the faculty into account.

Thus we shall define the grading standard as the per cent of students of a specified quality whose grade point averages equals or exceeds a designated grade. While any level of grade could be chosen we have used as the designated grade an exact C average or 20 on our numerical scale. This is the minimum level of achievement required for normal progress through the college.

The quality of the students has been determined from the predicted grade scale. Recall from what has been said earlier this scale provides the best least squares estimate of the average grade a student will make the first year based on a weighted combination of the HSA, and the two SAT scores.

Using the weighting procedure worked out in 1951, predicted grades were determined for students in the freshman classes of 1951 and 1956 through 1960. (College Board scores for the classes of 1952-1955 were not available but there is evidence to indicate that the student quality and grading standards for these years were the same as for the 1951 class.) Using these predicted averages, students were classified into the quality level groupings shown in Figure 1. Then for each quality level grouping of each class, the grading standard -- i.e., the per cent making a C or better average -- was computed. Standards for ten quality level groupings worked out in this way for the respective classes are shown in Figure 1. To emphasize the trend of the quality levels, the values for each grouping in the successive classes have been connected by lines. Consider, for example, the quality level (24-25). By following the dashed line for that level from left to right it can be determined that the grading standard for this group was approximately 79 in 1951, 70 in 1956, 62 in 1957, 60 in 1958, 49 in 1959 and 51 in 1960.

Without attempting a detailed analysis of the data in this figure, several important points can be noted:

1) As would be expected, the grading standard varies with the quality level of the student. Thus in the 1951 class, for example, the grading standard for the (18-19) quality level is 22 while for the (24-25) quality level it is 70.

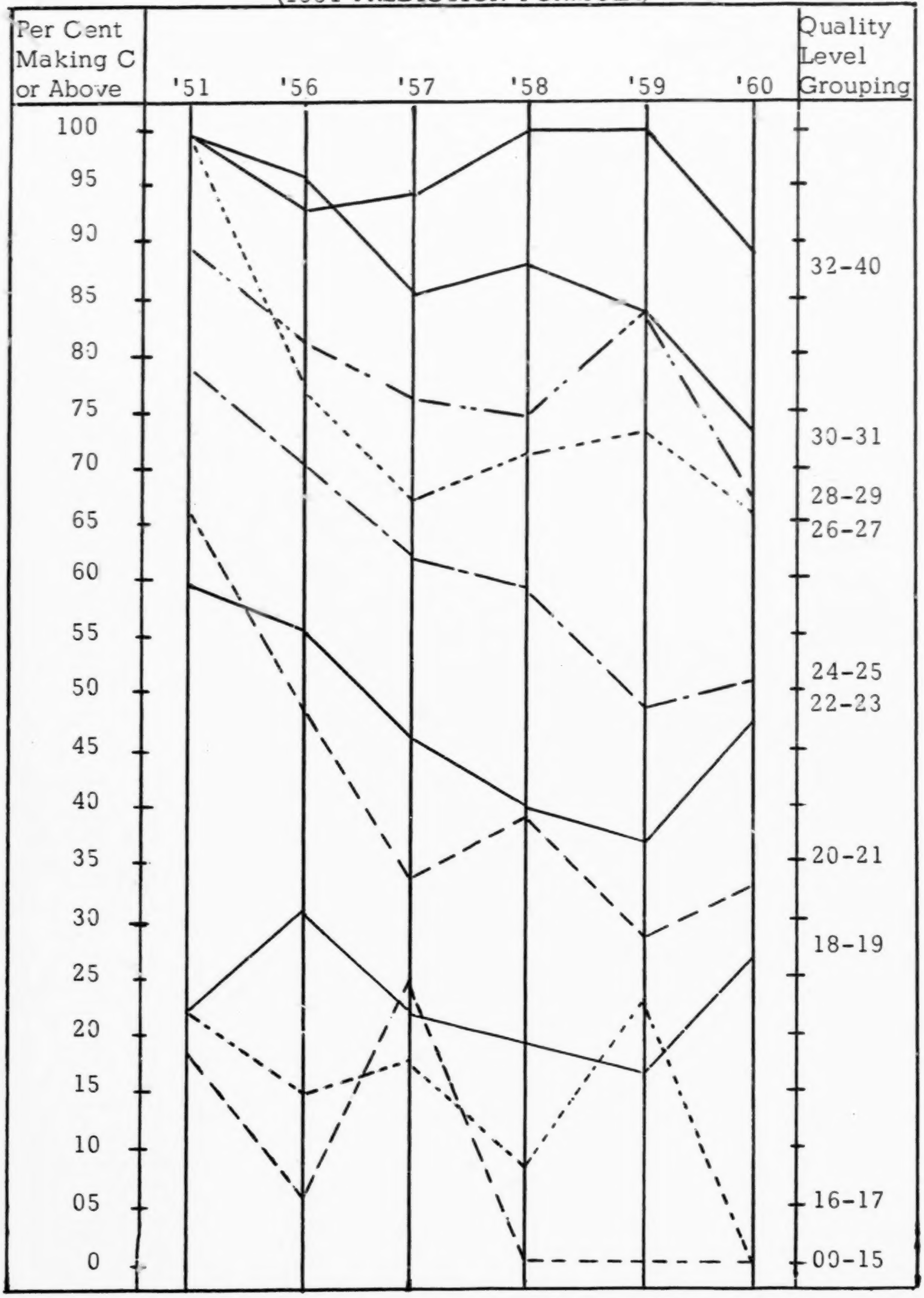
2) For the data as a whole, the trend of all the lines is generally downward. Thus the evidence indicates that in general the grading standard has become higher, that is harder, with successive classes.

3) The rate and amount of change varies from quality level to quality level. To illustrate, the standard for quality level (32-40) has changed only 12 percentage points -- from 100 to 88; while the standard for quality level (24-25) has changed 28 points from 79 to 51.

4) In general the quality levels showing the largest decrease in per cent making C or better have been in the low to middle C range (20-21)-(26-27). But for the class of 1960, as compared to the 1959 class, there is in these groupings generally an increase in per cent of students making C or better. These data seem to suggest a reversal of the trend in the grading standard for students in this range.

5) But for this class, again, compared to 1959, there are relatively larger decreases of per cent making C or better in the high C to A range (28-29)-(32-40).

Figure 1
PER CENT OF STUDENTS IN SELECTED PREDICTED GRADE INTERVALS WHO MADE AVERAGES OF C OR ABOVE (1951 PREDICTION FORMULA)



	'51	'56	'57	'58	'59	'60
SAT-V	431	467	506	504	502	536
SAT-M	464	485	516	516	512	553
HSA	29	30	32	32	32	32
Pred. Av.	20	23	25	25	25	27
1st Yr."	21	20	22	21	21	22
SD:SAT-V	99.4	95.7	90.5	89.6	84.0	83.9
SD:SAT-M	101.5	99.0	82.6	85.3	83.8	78.0
R	.78	.67	.60	.62	.76	.54

At any rate the chart taken as a whole clearly indicates that a change in the grading standard has taken place and that the change is in the direction of increased difficulty for a student of a given quality level to make a C average.

This chart together with the data at the bottom of the page thus show that, while the quality of the students as measured by SAT-V, SAT-M, HSA singly or in combination (Pred. Av.) has gone up, the over-all freshman grade average (1st Yr. Av.) has remained at about the same level. Also, the standard deviation (SD) for SAT scores show a steady decline, indicating the classes are becoming more homogeneous. And finally, the multiple correlation of the predictors with earned grades (R) is declining, indicating that earned grades can be predicted with less accuracy as the classes become more homogeneous.[2]

However interesting these data may be, they are descriptive only; and unfortunately they do not tell us what the causal factors of these changes are. The data undoubtedly represent the interaction of many factors in addition to student quality and faculty judgment. Among these would certainly be included changes in the curriculum, up-grading of courses, certain non-intellective characteristics of the students such as health, motivation, interests, values, various environmental factors, and particularly the psychological environment of the institution.

While we have no data collected for the express purpose of evaluating these factors, it is interesting to consider some of the speculations of our faculty and others concerning the causes of the observed changing standards.

Some people say that in spite of rising high school averages in-coming students are no better prepared than they used to be. The facts that students are making much higher scores on achievement tests given during orientation and that they are being exempted from some introductory courses seem contradictory to this conjecture.

Others say that the "norming" of the SAT must have changed so that a score of a given magnitude does not represent the amount of aptitude it formerly represented. The recent study of Professor S. S. Wilks of Princeton University, however, indicates the scoring scales have remained quite stable over the period covered by these reports.

Still others say the students are not as serious minded and motivated as they used to be. The students are more interested in a grade only and not in understanding the material; they are more interested in socializing and in extracurricular activities, they say. We have little relevant data that we have as yet analyzed; but the fact that scores on the Stern Activities Index which purportedly measure the intellectual and expressive needs of students are positively related to achievement, while need scales concerned with play are negatively related to academic achievement, would seem to suggest that students should be more achievement minded than formerly.

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[2] It may be noted here that the relationship between predicted grades using an equation developed from data in the class entering in 1951 and predicted grades based on a 1960 equation is very high -- r = .96.

There are again other faculty members who think the change in student-faculty ratio is a relevant factor. During the period covered by this report the size of the college has more than doubled; and the entering freshman class now is nearly three times larger than it was in 1951. The student-faculty ratio has changed from approximately 1:10 to approximately 1:16 or 1:18. Though we have no way to evaluate this factor, it most certainly could be a substantially related one.

Finally, there are some who assert the principal influence is that the faculty has changed its grading standards. Many faculty members seem to resent this assertion. Some even offer to show you their records to show their standards are the same as they have always been. Using data from the 1953 and 1957 classes, I computed the significance of difference between average grades in 11 separate courses normally taken by relatively large numbers of freshmen. There were only three significant differences. Two favored one class and one the other. In short, there seemed to be no differences in average grades.

Further when quality levels of the classes are regarded as ranks, the process of assigning grades seems to be applied to classes in such a way that regardless of quality level of the class, students falling in the various ranks are consistently graded on the same grading standard. Thus, professors do seem to grade on the curve.

Now an institution has a right to make of itself whatever it chooses. It has a perfect right to set and change standards as it chooses. The concern of the writer is that institutions not just let these changes happen in some haphazard way. The standard should not fluctuate solely as a function of the quality of admitted students. Preferably members of the faculty and administration, working together, should try to decide whether changes in grading standards should be made and what magnitude such changes should have.

Though they will probably have little control over changing standards, admissions officers need to be particularly sensitive to such changes. This is so because the core of admission policy centers around the relation of grading standard and student quality.

For human and technical reasons changes in the relation between student quality and grading standards will probably be reflected not in changed grade distributions but rather in the constants in regression equations which signify the relations of HSA and SAT scores to college grades. This fact can be illustrated rather dramatically.

Considering again the classes described in Figure 1, if for each class one computes the predicted averages (on which the quality level grouping are based) not from the formula for the 1951 class but from the equation derived from the data for the class itself, the grading standard lines will no longer slope downward to the right. Rather they will all be horizontal. This is because the changed relations between HSA and SAT scores and college averages are reflected not in the form of changes in grading standard but rather as changes in constants in the regression equations.

As changes in these relations can be subtle, but sudden, admission officers need to devote continual and careful attention to studies of the validity and appropriate cutting points for variables used in evaluating and selecting students.

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SOME CONCOMITANTS OF INCREASING SELECTIVITY IN COLLEGE ADMISSION

Dean K. Whitla
Harvard University

By speaking to you tonight I feel I am simply continuing a conversation that I have been carrying on fairly steadily for the past month or so. Selectivity in admissions is an area of vital interest to colleges all over the country, and during July, I spent a good deal of time mulling over this problem with admissions officers from as diverse a set of colleges as exist in the spectrum of higher education. These men and women, attending the Harvard Summer Institute on College Admissions (which I was directing), seemed consistently, when speaking of the problem of selectivity, to be referring to their college's attempts to up-grade the bottom half of the student population to the ability level of the top half. In other words, colleges would like to be selective in the sense of excluding those students who now fill the bottom half of their classes. Thus, in discussing selectivity, we seem universally to focus on only one criterion, the criterion of academic ability.

This reflects the emphasis of American education in general at this point in our history. In fact, it is interesting that we find as much, if not more, evidence of innovative and vital intellectual preparation taking place in the broader base of our educational system -- secondary schools -- than we find in most of our colleges. For example, the curricula in languages, physics, math, chemistry, history, have changed more in the last decade in secondary schools than in colleges, and this is not because colleges have been so far in advance of secondary schools in their methods of instruction.

One particular piece of evidence supporting this strengthening of the secondary school program is the rapid growth in courses preparing for advanced placement. This is tangible evidence of the sophistication of the secondary school program, where more and more college-level courses are offered to able students. In other words, high schools and private schools have taken over some of our work.

So whether colleges are becoming more selective in terms of a more able student body, or whether they are getting the effects of better secondary school populations, they are still forced to deal with new problems that are associated with the presence of a more intellectually oriented student body on campus.

Tonight I would like to focus on the effect on colleges of this new generation of students, a generation that has brought us face to face with a new set of problems that arise both from greater selectivity and better secondary school preparation.

What happens in colleges where the undergraduate student body is more intellectually able and interested than their predecessors? Here I would like to draw extensively on experience at Harvard College, not because these experiences are in any way unique to Harvard but rather because I think they indicate the kind of thing that is happening on campuses all over the country, and more importantly, because I know about Harvard, and can be more specific -- always a virtue in a speech such as this.

Let me separate changes that have occurred into two aspects -- the curricular first, and secondly, changes that have affected the psycho-social development of the students.

Curricular Changes

Curricular changes are more objectively observable and definable, so let's start with this area. While it would seem quite simple for admissions officers to receive support from faculty members on programs designed to up-grade the student body, a change that would in turn allow up-grading of the curriculum to meet the improved preparation and ability of entering students, it in fact takes much more doing than at first would seem necessary.

Let me illustrate this remark with a situation occurring a few years ago in our Mathematics Department. We used to have a course called Math C which the faculty offered to students who did not seem prepared to undertake the regular freshman calculus course, Math 1. The Math C course has now been dropped from our college offerings. (The elementary end of the course continuum is, by the way, the easiest end on which to effect curricular change.) Not only did the Math Department find no need among freshmen for a preparatory course, but they at the same time acknowledged that to accommodate the talented freshmen the need was for a more accelerated course than Math 1. Math 11 was set up for able students who did not have sufficient experience with the calculus to be placed normally in an upper-level course, but had interest and inclination to want to accelerate their progress towards becoming mathematicians.

Thus two years of mathematics were presented in one year and the course, of necessity, had to be very abstract in nature with all applications of mathematical theorems solely the responsibility of the students. The size of this class was limited to about 75, for the department held the view that in a college class of 1100 there could not be more who even had the potential for mastering such material, never mind really possessing the ability for becoming mathematicians. They therefore sought the most able and made their selection from the group of freshmen with mathematical aptitude test scores above 750. But lo and behold, the number of students with such scores who wanted to register for the course was twice the desired enrollment so they raised the cutting point to the score of 775, sure in the knowledge that there could not really be that many future mathematicians in a single freshman class of Harvard students. Arguments then centered on the fact that if students with 750 scores could handle the course, why not increase the size of the class rather than artifically limit it to this small number. The key which helped to break the stalemate was a personal factor -- a young full professor who had achieved his rank at a tender age acknowledged that he had only a 715 MAT score and he admitted feeling sure that he could have handled the course when he was a freshman. Since that time we have retained the lower cutting line and have kept enrollment open to any student who meets this requirement.

The Mathematics Department has also permitted more flexibility in placing students in courses and we have developed the system of permitting students to change a course in mathematics in which they are enrolled any time during the first semester. If they find Math 1 too simple they can move to Math 1 honors section or to Math 11 or to Math 20 or even to Math 105. There is a minimum of bookkeeping change and no college charge. Conversely, if they find the course in which they have enrolled too steep for them they can move down in the sequence with similar lack of encumbrances in registration details. This kind of flexibility tends to emphasize the individual and his unique strength by building on all of his experiences of what he can do as well as his ability to do it. Such freedom in an educational program helps the admission process by attracting students who will respond to such intellectual freedom. Basically it is the college and its program, not the charming manner of the admissions officer, that attracts applicants to the college doors. Let me use a similar example of curricular change that has taken place at Cal Tech, which has also found that it has had to step up its freshman courses to meet the increased ability of its freshman classes; it shows how appealing their program would be to fledgling scientists. President DuBridge has discussed the change in their whole curriculum in an article, "Why the New Freshmen Keep Us Hopping," reprinted in the College Board Review in the spring of 1962. He writes:

> The physics curriculum -- after many years of gradually advancing in level, but following the old pattern -- is now being radically modified. Modern physics is no longer a separate subject to be taken as a postscript to a standard course. It is, rather, a new -- and marvelously revealing -- way of thinking about the subject. Why should able freshmen not be given the advantage of this new point of view right at the start? Is quantum theory, or relativity, or nuclear physics

> too abstruse for a well-prepared freshman? Not at all. They eat it up, just as they do the new approach to chemistry.
>
> For example, the principle of conservation of energy has always been an important concept in physics, serving to unify the fields of mechanics, electricity, and heat. With the development of the theory of relativity and the recognition that all forms of energy exhibit the property of inertia, or mass, the new principle of conservation of mass-energy takes on broad significance in every branch of science, including atomic and nuclear physics as well as astronomy and cosmology. Unity and clarity are thus introduced into many areas if this comprehensive principle is introduced early in the physics course.

Another whole area of change in course work is the acceptance by many colleges of the advanced training given in secondary schools for placement in college courses. This in effect means that faculties are admitting that college freshman level instruction can be effectively conducted in secondary schools. Because these secondary school courses are infringing on the previous college domain, faculties can in an egocentric fashion put up resistance to these programs -- it is not always easy for a professor to admit that his course can be taught in high school. Often considerable negotiation with the faculty must be carried on before the program gains acceptance, before advanced placement credentials will be recognized as the equivalent of courses so that freshmen can actually begin in advanced work.

Obviously, the faculty must accept the advanced placement point of view before the program can function.

Advanced placement is now strongly established at Harvard, with 452 freshmen in the fall of 1961 presenting 1,396 Advanced Placement exams and receiving advanced placement in 906. This successful infiltration began by persuading faculty to admit strong scoring candidates -- 4 or 5 advanced placement scores -- to some upper level courses in the languages, history, and sciences. Then it was demonstrated that the grades of such students were as good as those of students who had prepared for the advanced course by taking our own beginning courses. Then we tried placing students with scores of 3 on advanced placement exams in some courses and found that such a score seemed to be good enough for students to perform successfully in middle group courses. Thus it was by a combination of persuasion and evidence that the faculty as a whole came to support and encourage advanced placement at Harvard.

Psycho-Social Problems

Less observable, but as significant in the educational process, are the obligations of colleges to recognize the special psycho-social problems of an academically oriented student population. Any college in the country, as it achieves improved academic attitude and ability in its student body, is going to run into side effects of which it must be cognizant. For example, everything isn't going to be rosy simply because you increase the ability level of the students. Another set of problems arises with increased selectivity, and these are as difficult to solve as problems that occur with less able students. It certainly is an obligation of admission officers to be aware of them and to discuss them with the faculty. Again, by drawing on a few examples from Harvard, where we have gone through this sequence of change in the last decade, I can perhaps illuminate for you some of the problems, and attempts at solutions, made by this one college.

Many of the concomitant effects of selectivity are psychological and social in nature and arise out of student attitudes, affecting their interaction with the college environment. We know that with the increased academic ability and orientation of our students, there is more of a student attempt to actually meet and deal with the kinds of course material they are presented.

But the faculty does not give a marked increase in number of high grades. Thus, competition gets a lot stiffer, and pressures increase on students who accept more wholeheartedly the goals of academic success and take mediocrity and failure more to heart. An extreme example of this was found in a study done at MIT. They found that in an institution where the main value of the environment is academic excellence, and where this is about the only area for achievement and outstanding performance, everyone below the top decile in grade ranking feels he is a failure.

Added to the increased competitiveness of such environments as Harvard's and MIT's, is the fact that far more students now feel they have to maintain high grade averages in view of the later competition they will meet in seeking admittance to arts and sciences and professional graduate schools.

Problems of the "Academically Average"

In a study soon to be published, I have found that the detrimental psychological effects of the academically average position in such a college milieu as Harvard's have already cropped up -- and I'm sure they are probably plaguing students at many other selective colleges. In an environment that is competitive intellectually, the student is often consigned to his own sense of mediocrity, and sometimes to a status where he can justify his anonymity by looking at other hundreds like him who are just "numbers on an examination paper."

More specifically, just what kind of reaction to their academic status do we find in men who were finding themselves "average," often for the first time in their school careers? To what degree was this something of concern to the student himself? My study of the academically average at Harvard is based upon interviews with graduates, so I can quote directly to you.

> I'm afraid I didn't encourage contact (with the tutors). I did not try to seek out people to talk with very much, perhaps scared away because they were usually surrounded with some people who appeared to me to be better than I and I didn't want to appear second rate to (the House Master) or some other (tutors) in the House.

> I think I was a little afraid of (faculty) and a little unsure of my own ability. I think I had the feeling during a good part of my education . . . that I was intellectually inadequate as compared with many of the students among my fellow classmates. . . .

Actually, because of their increasingly higher secondary school ranking, as a group, when they entered Harvard, our more recent graduates found this transition to average ranking even more jolting than classes of several years ago. They were appalled to find half the class more able than they.

> I find it hard for myself (to get more faculty contact) because there is a little feeling of inferiority of the student and can I really ask him intelligent questions to start out with and if he asks me a question where am I going to be then, am I going to look like a dunce. . . little informal things (like sherry parties) where you stand around and talk to two or three professors and section men . . . I think this is very good. But on an official level, this is rather difficult for the average student to get anything out of because he might run into something he might not be able to cope with. On an exam, all you have to do is sit down and face the blue book, if you don't know the answer, you write around it. If you are sitting next to the fellow, he is going to be prying and if you don't want to be pried on, then you are in a bad situation.

> I think that one of the shocking things is having to realize . . . there are at least 500 people better than I am . . . I knew they were pretty good, but I didn't know that they were that good . . . I took the coward's way out. I decided I can't get A's, there is no disgrace in getting B's. Do the best I can and not worry about what the other guy is doing. . . . During my sophomore and junior years, I went into sort of a depression, not feeling myself adequate

> for the university . . . it wasn't until about the middle of my junior year . . . that I realized well, gee, I'm not such a clod after all.

The shock of averageness was brought up spontaneously by these men in their interview covering the college years, for it was their reaction to a high-powered environment. The impact of averageness (and its ramifications) emerged as the most significant deterrent to greater participation of this group in the intellectual life of a college, and accounted in large part for their feeling unable to overcome the impersonality of a large college environment and to achieve recognition as individuals.

I did find that contact with professor, tutor, and House Master was an important factor to these academically average men in developing a sense of personal direction. Yet the very status of "averageness" kept many of them, as students, from entering situations where such contact would be possible and thus kept them from finding the kind of guidance they were seeking.

Certain programs and goals do act as prods to focusing undergraduate energy, however. Many of these men, for example, found that their senior year thesis -- which is independent work supervised by a tutor, and which culminates in an honors degree -- was the most challenging and rewarding experience of their college years.

In other words, the first step the college must make is to recognize that problems exist for such students, and then to try to cope with these problems by tailoring programs to individuals, by lots of seminars (for example, at Harvard, we have been quite pleased with the results of an experimental freshman seminar program which I shall shortly describe to you), by setting up tutorials and group seminars in the Harvard Houses, the residential system, and by trying to bring to honors program more and more of the undergraduates. These are ways Harvard has tried to make each student feel the college is concerned with the course of his education and with his status as an individual.

Another method of improving the student's frame of mind in a tough intellectual climate is to support a variety of activities which in themselves come to hold considerable importance in student minds and in which the average student can excel, even if his classroom work is not of the highest calibre. I'm not prepared here to discuss how you would go about setting up the right kind of program for your school, but I think that the support given by a university-college such as Harvard, for example, to the new Loeb Drama Theater which many of you may have seen or read about, encourages students to follow a strong interest in theater and drama, and to feel that professional facilities -- the mark that this is of value and worth as an activity -- are made available to them as undergraduates.

I am discussing two kinds of alternatives, then, that seem to confront a college administration. One would be to encourage as much seminar and independent work as possible, and to assure enough flexibility in the college set-up so that programs can be tailored to the individual students, and also to support the presence of extracurricular activities around the college so that there are ways for the student to gain recognition as a person and to find some strands of connection between the institution and the individual. Secondly, through the admission process itself we can try to select students who will flourish in spite of the fact they will rank in the bottom half of their class. How do we select students who can manage to handle competition even though they are not the most successful. Well, for example, if a man comes from a competitive school where he has continued to excel in all kinds of activities, we assume that he might be able to continue on this keel in college. While he may not be the most brilliant student, he has so many other qualities and abilities that we take him hoping he will continue to demonstrate the same kind of breadth and spirit in his college activities as he did in his secondary school development. Increased selectivity at Harvard has certainly meant increased selectivity on personal qualities especially for men whom we predict to rank in the bottom half of their college class. As I have mentioned, a much greater individual treatment of the student's program has been another important and constructive result of increasing selectivity at Harvard that helps us to overcome the "averageness" syndrome and give the student identity and personal direction in the large university-college. Programs are tailored to interests and expectations rather than to the demands of a rigid curriculum. Of course, there are still plenty of requirements of distribution and specialization, but we hope that we allow enough freedom so that the student can swallow these rather than having them swallow him. Also, because students seem to respond to the intellectual climate, we feel freer to give them the scope afforded by seminars, tutorials, independent research work.

Another way the college has tried to counteract the press of the environment is by grouping the freshman dormitories into a type of "House system." The dormitories have been grouped into five administrative units, each under the direction of a senior adviser, who functions as an assistant dean of freshmen and has as an integral part of his staff proctors and advisers for his 250 men.

Within these new House units there are also common rooms designed to give students a greater sense of membership in the community, by providing centers for informal discussions, and for freshman and concentration seminars. Within this more structured residence system, the freshman retains maximum freedom to govern his own activities and to meet his academic obligations, but has available to him ready advice and the moral support of a smaller unit.

Thus the balance between the extremes of paternalism and impersonality has been sought.

Another innovation in the freshman year is the Freshman Seminar Program. In order to preserve, in these fine young minds, the sense of exhilaration, of ability to achieve something extraordinary and exciting, a program has been established to give substance at the start of the college years to youthful dreams before such detrimental impacts as averageness begin to work their effects. This program offers freshmen the opportunity to enroll in a non-graded, credit seminar under a faculty member. This past fall, 200 Harvard and Radcliffe freshmen were enrolled in 33 seminars. Originally, the seminars were taken by men who were academically stronger than our average. Now, however, all types of students are entering these seminars and this may help to solve the problem of contact and aspiration voiced by the "average" student.

So often the hard facts of college life -- the need to ingest the plethora of new material, new facts, details and theory, along with the grade competition among these very able student populations -- become the difficult and controlling realities of the college world and tend to produce that cynicism, that sense of small defeats, that make a man feel ordinary. In other words, we must exploit spontaneous enthusiasm and insight before these qualities die away.

Two special advantages of the seminars are the absence of a grading system that carries ranking with it, and retaining course credit. A seminar takes the place of a course in the student's program so that minimum external incentive to work remains.

In an academically oriented environment students can almost forget that college life is a microcosm -- that there are endeavors besides the academic which are intrinsically important and necessary to society. The role model becomes an effective way of recalling or presenting another frame of reference. Such a method is widely used at the professional level of education: noted physicians frequently lecture and conduct operations for the extern; noted barristers and jurists lecture law students and judge their moot courts; and the company president is a frequent visitor to business schools.

As the Freshman Seminar Program tries to arouse excitement about independent academic work, so do career conferences now held during freshman year try to help students bring their interests into focus.

One of the values of a tentative vocational plan is that such a personal goal can give a purpose and a direction to college life which can be important to the student who feels outside the circle of successful and recognized academic activity, and lost in the mass.

While these career seminars have been held for some years, a recent change has been to locate them within the House units for both upperclassmen and freshmen. This is another way of making the House and freshman unit systems the natural centers for student activities, and of scaling down the university at large into more familiar and intimate groupings where the sense of affiliation can develop.

A recognition of the need to draw the average student into the academic fray has been shown by the faculty in recent legislation concerning the tutorial. The faculty has extended this program to include all sophomores in departments offering tutorial. This has been another attempt to involve students more deeply in their major field. The faculty has recognized the need to bring the situation to the student rather than to expect the average student to take the initiative on his own. The increasing number of men who graduate with honors -- in other words, men who have usually written a thesis -- seems encouraging when we consider that the thesis-writing graduates we interviewed were happiest with their college educations.

As I mentioned, we have also added to our House system tutorial staffs and more residential tutors, so that in the normal living and social situations of day to day college life, and outside of the formal classroom setting, the opportunity for a strong intellectual interchange exists. In fact, the intellectual tone of the Harvard Houses has so increased over the last decade that what one of our interviewed men called "dinner table education" might well be an appropriate description of an important segment of college life.

I might also add that with an increasing percentage of the college population going on to graduate school, colleges must incorporate into their functions the same kinds of services for placing students into graduate schools as secondary schools have established for getting students into college. This involves a different kind of placement approach than the ordinary job placement and the visits of representatives from industry.

At the most obvious level, it necessitates a counseling office that provides information on scholarships, fellowships, graduate exam requirements, and provides a library of catalogs and informative literature. A different series of recommendations from faculty, advisers and staff in the student's department are required. As the student body becomes more able, the average man of your class, though not standing out academically in college as the same quality man might have in earlier decades, still merits as much consideration from a graduate school as your earlier alumnus. Thus he needs this extra help and guidance if he is going to be successful in his quest for graduate school admission and look strong enough to compete successfully. At Harvard, for example, the name as well as the function of the placement office changed a few years ago from the Student Placement Office to the Office for Graduate and Career Plans.

I've obviously been focusing on the problems resulting from increased selectivity, but in closing I should certainly state that the rewards are far greater than the problems. The presence of such a student body adds an air of excitement for reading lists are read, and shortcuts such as ponies become unpopular.

For example, in my own freshman seminar last year, I made reference to six authors in the process of setting the stage for the main work. At the next meeting not only had the major work been read -- the same work, by the way, I have used in graduate courses -- but extensive questions were also raised about the other six authors' works. A refreshing experience. In fact, it is commonly acknowledged at Harvard today that if you want to do exciting teaching, teach undergraduates. This is one of the most delightful concomitants of this new era in the American college.

PART III

ASSESSING ACADEMIC POTENTIAL

Presented by

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ASSESSING ACADEMIC POTENTIAL

John R. Hills
Office of Testing and Guidance
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Let me start by providing some background as to my point of view with regard to college admissions. No institution is unselective. There are some institutions which allow anyone with a high school diploma to enter the freshman class. At these institutions the selection merely takes place after admission. The form of post-admission selection varies. In some colleges a large portion of the entering freshmen withdraw or flunk out before the start of the sophomore year. The weak fail to survive. In other institutions a considerable number transfer out, even though they are doing very well academically. The bored take flight. In still others the institution assigns the student to a program or a unit of the institution in accordance with his academic potential. Or a student may have to prove himself within one part of the institution in order to be admitted to another part or program. The marginal are segregated. Somehow a sorting process takes place. So we cannot avoid facing the question of how we will be selective.

Equality of Opportunity

Those who reject the idea of selective admissions at the college level argue that everyone should have the opportunity to go to college. Some limit this by arguing only that every high school graduate (or every graduate of an accredited high school) should be admitted to the college of his choice, to the tax-supported college of his choice, or at least some college. But anyone who is close to either schools or colleges realizes that attendance or graduation from a high school no longer signifies much other than that a person has lived for approximately eighteen years. While accreditation may once have indicated something about the quality of a high school clearly the failure rates of graduates of accredited high schools in our country's colleges reveal that it is not true at present that graduation from an accredited high school signifies that a student is able to do college level academic work. Thus, graduation from high school does not mean that a student has demonstrated that to deny him admission to college would be equivalent to denying him college graduation and all that it implies. Mere graduation from school in no unique way gives him a right to a "chance" at college. After all, he has had twelve or more years of chances to prove that he was an able student, to get good grades in school, to demonstrate his ability and his achievement on test performances. Colleges do not ignore previous schooling when making admissions decisions, but they aren't fooled by a mere diploma either.

Let's explore the logic of this "right" to have a chance at the next step on the academic ladder (even though relatively unsuccessful on the earlier steps). If it is right for everyone to have a chance at the freshman year at college, why should not everyone have the privilege of trying the first year of graduate school? Discrimination at either level is no more and no less arbitrary. Then why should not everyone have the right to enter a professional school such as medicine? It is thus similarly a denial of equality of opportunity to keep anyone from practicing as a surgeon. The determination of who gets a medical degree is no less arbitrary than the determination of who will be admitted to college. Both decisions are based on previous academic performance and potential for success at the next level. The fact that the inept surgeon may kill a lot of people is irrelevant except insofar as it introduces a tangible, significant, social loss. The inept scientist, philosopher, or school teacher may produce even more severe losses for other people, though not so easily recognized or clearly attributable.

Institutional Goals and Admissions

Selectivity in college, then, is ubiquitous, and it is not unfair or undemocratic. Then how should it be accomplished in such a way as to be of most benefit to the individual student and the scholarly community, those for whom colleges exist? To consider this question we must recognize that colleges vary greatly in the level of academic potential of students now in attendance. Some colleges are attended predominantly by students who are in the lower half of the population intellectually. Others admit only those in the top 10 per cent of the nation's academic talent. There are colleges at all levels in bewteen. Now I argue that to be most beneficial to students and to the community, a college should explicitly decide to organize to serve a particular level (or levels) of student. Then it can more effectively do full justice to the kind of student it chooses to serve, and it should select such students, denying admission to others. Only with the greatest attention to organization and the most meticulous control of function could a college optimally serve all levels of student talent. If the institution organizes to provide the services, courses, level of instruction, and facilities to present something of value for the academically weak student, it is in very serious danger of providing nothing for the academically talented. If it organizes to provide for the academically talented, it is equally in danger of merely frustrating the academically weak. Neither of these results is as fruitful as having helped the student who is not fitted to a particular institution's goals to find the niche in life for which he is fitted.

I say that a college should explicitly decide what particular kinds of students it will attempt to serve. Such a decision determines the primary goal or goals of the institution. Therefore it must be explicit with no hiding behind catch phrases or cloudy words, and, naturally, the goal of the institution should be made public. Every college will say that it has formulated its goals; they appear in the catalog. Yet, you and I know that most of what appears in those catalog statements is pure public relations, uncontaminated by any serious institution-wide consideration, debate, and consensus as to just what the institution should be trying to do, why it should try to do those things, to whom should it try to do them, and how it should proceed. The number of colleges with sensible, explicit, public, and defendable goals and with admissions procedures to match is about as great as the number with intellectually honest statements of institutional goals in the college catalog.

Academic or Economic Goals

We must choose our goals, and it seems to me that the choice must be an educational choice rather than an economic choice. All too often our purposes, not necessarily stated, hinge on economics rather than academics. Let me put it this way. Shall we admit to our colleges enough students to fill the dormitories and the cafeteria, regardless of student quality, or shall we admit only the students who reasonably well fit our level of academic program? I realize that we justify taking in all the students we can by saying there is a tradition of giving everyone a chance until we can hold no more. I question the kind of "chance" we are giving. I also ask whether we are hiding behind this questionable tradition when, really, economic considerations are determining educational policies. This question becomes salient now, since we can fill all our dormitories and cafeterias with appropriate students within a few years merely by refusing to build new ones. But do we have the courage to turn down the easy dormitory loans and turn down the students who are too weak or too strong academically to profit from the kind of educational experience we offer. (Mind you, we have the selection problem if our goals say we are going to help the academically weak students. Then we must turn down the unusually bright students who apply to us, because we cannot give them as good a "chance" as they are entitled to and can find elsewhere.)

Academic Empire Building

The functional goal of a college should not be based on economics nor should it be based on academic empire building. The kind of empire building I am talking about is particularly an affliction of college presidents. Unfortunately, they know all too well that the layman judges the administration of a college by the expansion of its student body and of its building program. The two go together. The president wants the college to expand because that enhances his reputation. The only way to get the money to expand is to be overcrowded. Therefore, the admissions office is encouraged to take in students, the students are forced to double up, triple up, quadruple up in the dormitories and overflow into the community. This provides the president with the argument he needs to extract from his sponsors the funds for the building of new dormitories. New dormitories, of course, necessitate new classrooms and laboratories. By overcrowding them he starts the cycle again, and eventually retires famous. Sometimes sponsors run out of money or sufficient growth or status is assured that the administration is not concerned about its reputation. Then the college becomes selective and probably bases its selection on academic potential. I argue that such empire building robs every student who suffers through it. I'm opposed to such knavery.

Assessing Academic Potential:
Some Current Issues

What do we know about assessing academic potential of present or prospective college students?[1] Well, we have some ideas which are very popular but either (a) unsupported by research findings, or (b) definitely in need of continued critical examination, logically and empirically. That the personal interview leads to improved prediction of performance must be placed high among the leading examples of ideas in the first category.

Almost any college faculty, administration, or admissions office may be found to hold the belief that a personal interview contributes substantially to the accuracy of individual assessment (_e.g._, for evaluating the academic potential of a candidate for admission). Yet, time after time, evidence has indicated that accuracy of predictions is _not_ improved by personal interviews. Dr. Lewis B. Ward (see _College Admissions No. 2_, College Entrance Examination Board, 1955) reviews literature which indicates generally that from interviews one _can_ predict performance on intelligence tests or grades in an academic program, but that test scores typically turn out to be as good or better predictors of academic performance (with less involvement of time and energy).

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[1] Unless otherwise indicated, "academic prediction" or "academic assessment" is thought of in relation to typical, grade-average criteria of performance or "success" in college.

Dr. Ward reported a special study undertaken at the Graduate School of Business Administration at Harvard. In this study, conducted by S. A. Kendrick, it was found that students in the sample admitted under experimental conditions who would not ordinarily have been admitted because of poor showing in the assessment interview but whose non-interview credentials were good tended to be more successful in the school than their counterparts in the sample whose interviews boosted them over the hurdle posed by their poor non-interview credentials. These results led to a relaxation of the requirement that all applicants for admission be interviewed, although the possibility of a pre-admissions interview was held open for all applicants.

Why is it that assessment interviews are so popular in the face of evidence suggesting that they are no more accurate, and sometimes less so, than objective procedures? It has been suggested (E. Lowell Kelley, Annual Review of Psychology, 1954) that because of the sheer volume and variety of information obtained through the interview (though much of it be conflicting and irrelevant) the decision-maker can always find something in the large amount of "confusing" material to support almost any decision made; and since the decision-maker is typically "too busy" to check his decisions against actual outcomes, he freely gives testimonials for the interview. Quite often, unfortunately, those deciding whether or not assessment interviews will be used are not accustomed to dealing with hard-nosed research. They are more inclined to accept testimonials; that way they can claim to be on the side of the experts![2]

Moving to another approach to assessment, what about the usefulness in academic assessment of personal information or biographical data about applicants; e.g., information on hobbies, family size, order of birth, etc. Many results have been disappointing in that such information failed to add substantially to accuracy of predictions of college grades when combined with test scores and high school grades. An example here is provided by research conducted by Webb (Journal of Applied Psychology, 1960) in developing biographical inventory keys for predicting academic success at Emory University. After producing a very sophisticated scoring procedure for inventory items, it was found that they might be expected to add practically nothing to the accuracy of assessment obtained from standard predictors of college grades. In general, when college grades are employed as the criterion to be predicted, biographical data have been found to be of limited value. For other types of criteria of "success" in college, this assessment procedure may have greater utility (Anne Anastasi, *et al.*, *The Validation of a Biographical Inventory as a Predictor of College Success*, CEEB, 1962) but it must be considered "experimental" rather than operational.

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[2] The usefulness of the personal interview for counseling, public relations, information exchange or other purposes is not here in question. It is, rather, the use of the interview as a basis for assessing the academic potential of applicants that is at issue.

What about size of the student's high school graduating class as a factor predictive of college grades? At the University of Georgia (1960) and the Georgia Institute of Technology (Loveland and Hills, 1959), it has not been found to be of significant value *if* one has available test scores and high school grades combined by multiple regression techniques for making predictions.

Of much current interest is the question of the utility of adjusting the high school grades of students in terms of knowledge of the particular school, or category of schools, in which the grades were earned. Is this procedure helpful? The answer seems to be of the "yes and no" type. If *only* high school grades are to be considered, I believe that making adjustments of those grades according to the past records at a given college of students from each high school may reduce to a modest extent the errors of prediction (standard error of estimate) of college grades from high school grades. The extent of the reduction in error of prediction will probably depend, in part, on how varied a group of high schools a given college serves; if they are a fairly homogeneous group, or if most students come from one or two large high schools, then little can be expected from such adjustments.

In my opinion, the answer to the question is "No," *if one uses aptitude test scores along with high school grades, combined through multiple regression techniques, as predictors of college grades*. Bloom and Peters (*Academic Prediction Scales*, The Free Press of Glencoe, Inc., 1961) report studies indicating improved prediction by adjusting high school grades. They do *not*, however, compare the standard errors of estimate obtained by (a) using *adjusted* high school grades in combination with aptitude test scores, with those obtained by (b) using *un*adjusted high school grades in combination with aptitude test scores. Evidence reported by Willingham (1963), based on data for students at the Georgia Institute of Technology indicates (a) that adjustments based on past experience lead to some improvement of the high school grade average as a *single* predictor of college grades, but (b) that a combination of *un*adjusted high school grade averages *and* aptitude test scores leads to accuracy of prediction which is identical with that resulting from a combination of *adjusted* high school averages and these same test scores.

Willingham's results (1961, 1963) and data which I have analyzed at a medical college (Hills, 1962) and at a junior college (not published) tend to support the thesis that the utility of adjusted high school grade averages in predicting college grades should be evaluated in terms of the contribution of adjusted and unadjusted averages, respectively, toward reduction of errors of prediction *when each is combined with aptitude test scores*. My view, at present, is that under such conditions unadjusted grade averages are likely to be just as useful as adjusted grade averages. My rationale is that test scores themselves introduce an "adjustment" of high school grades. Students attending "easy" high schools, for example, who get good grades may get low test scores, thus lowering their predictions. Students attending a "tough" high school and earning mediocre grades may get high test scores due to the academic pressure and thus get a higher prediction than that reflected by their high school performance alone. The question, of course, can be resolved through research such as that now being sponsored in "central prediction" by the College Entrance Examination Board (e.g., in Texas under the direction of H. Paul Kelley, University of Texas).

Does it help you to know whether a student's grades were improving or getting worse as he proceeded through school? I do not know of a study of this made at the high school level, but at the college level Willingham has studied this problem at Georgia Institute of Technology. He found that knowing the trend of a student's grades in particular college courses, such as mathematics and English, was of no help in predicting subsequent average grades when used as a predictor in addition to the student's current over-all average college grade.

Does it help in predicting academic success to know how many high school academic units a student has upon entering college? Mrs. Mary Livengood (1962), in a master's thesis at Auburn University, found that at Columbus College in Columbus, Georgia (a two-year junior college), for girls it made no difference whether they had fewer than 12 academic units, 12 to 13.5 academic units, or 14 or more academic units upon entry. For boys, the results were not so clear. It seemed that under certain conditions, boys with fewer academic units might obtain better grades for the same ability as measured by the College Board Verbal score, than boys with more than 14 academic units. Under other conditions, the reverse would be true.

It is my understanding that the gist of a number of studies around the country over the years is that the pattern or number of academic units is of very little value as a predictor of academic success in college. Here again, one must think of the value as predictors of knowing an applicant's pattern or number of units in addition to knowing his over-all high school average and his aptitude test scores. C. Y. Melton (1961), in a doctoral dissertation at the University of Georgia, like Mrs. Livengood, kept this in mind. I'm afraid most investigators in the past have ignored this point. Melton's study concerned the pattern of high school units, rather than their sheer number. He found very little value to knowledge of how many units in various areas a student had taken.

This is a somewhat different topic from that discussed by the late Herman A. Spindt, who was Director of Admissions and Relations with Schools, of the University of California. He concluded that, while there is little study of the problem, such evidence as he had indicated the considerably greater predictive value of academic-subject grades. He said that the superiority is so great that ordinarily grades in subjects primarily of a manual nature (art, instrumental music, home economics, industrial arts, typing, agriculture) should be ignored in attempting to predict academic success in liberal arts college (see Selection and Educational Differentiation, University of California in Berkeley, Center for the Study of Higher Education, 1959). Now, unlike the studies I have just cited, Spindt was not questioning here the soundness of our common requirements that certain amounts of certain subjects be taken in high school, nor was he considering whether knowledge of the high school courses taken by a student helps prediction. He only said that when you calculate a high school average for predicting college success, you should include in the average only grades in academic subjects. Frankly, I haven't seen the studies Spindt was considering here, but his conclusion does not fit the evidence I have seen. I just don't think that if you have test scores and high school average included in a multiple regression equation, whether you count all high school grades in the average or count only academic grades will have an important, practically significant influence on accuracy of prediction of college grades. The way for you to find out whether Spindt was right or I am right for your college is to do your own study on your own students.

I want to emphasize what I just said about doing research at your own institution on your own students. In the last few paragraphs I have been trying to distill experience in this field in order to help you make better guesses as to how to proceed in assessing academic potential in your own institutions. One makes a guess as to procedure when he lacks information. It is much better to have the information and not to have to guess. The way to obtain the information you need at your institution on assessing academic potential (or projecting enrollment, planning facilities, budgeting, etc.), is to conduct the relevant research at your own institution on your own problems. Just to show you how wrong for a particular institution guesses which have been distilled from experience at other institutions can be, I would say that one of the safest guesses that could be made is that College Board SAT scores will be positively associated with college grades. Yet for men at one of the larger colleges in Georgia the correlations of V and M with first year grades in 1960-61 were both .15 or less. You need to know about your own situation. You find out about it by doing your own research.

Using Data to Make Predictions

Suppose that we have a variety of kinds of evidence about a student, perhaps including data from interviews, evaluations of high schools, counts of academic units, and hopefully the student's average grade and his scores on an academic aptitude test. What is the best way to put these data together into an evaluation of his academic potential? Well, the old, tried and -- well, let me stop there -- the old, tried way is for the admissions officer, with his "30 years of experience," to sit back in his chair, look at the data, and make a decision. Dr. Paul Meehl, of the University of Minnesota, in his book, Clinical Versus Actuarial Prediction (University of Minnesota Press, 1954), has dashed the claim that this can be accepted as the most effective and efficient way to generate from the data accurate predictions.

Maybe it's better to have a committee synthesize all these data into an assessment? However, I'm sympathetic with the Yale faculty member who was evaluating Yale's committee procedure for admissions. He said, "Even after years of experience, you sometimes have the nasty feeling that you could take all the thousands of work cards -- except those for the 500 students at the top of the list and 500 at the bottom, whose ratings nobody could honestly question -- and you could throw them down the stairs, pick up any thousand, and produce as good a class as the one that will come out of the committee meeting" (see How an Ivy League College Decides on Admissions, by Katherine Kinkead, Norton, 1961).

Well, what alternative would I recommend? I would recommend your using the simple multiple prediction system which is described in almost any basic statistics text under the title of multiple prediction, multiple correlation, or multiple regression. I have alluded to it several times already and recommend that you include among your predictors scores on an academic aptitude test and the over-all average of high school grades. If you are so fortunate as to discover other predictors at your institution which add to the accuracy that can be obtained from test scores and grades, include them as predictors in your multiple prediction formula. In assessing academic potential, don't do any further diddling with these predictions.

Those of you who have had experience with multiple regression statistics know that the initial outcome of such a procedure is a somewhat complicated formula; at least it appears to be complicated. It might read something like this: Predicted College Grade equals .0228 V + .0190 M + .4444 HSA + 42.5780, where V stands for the College Board Verbal score, M stands for the College Board Math score, HSA stands for the High School Average (where A is 40, B is 30, etc.), and the grade is on a scale where A = 90, B = 80, etc.

You might say that a formula such as this could never be used in an admissions office where one had to process a great many cases. Fortunately, you don't need to compute the predicted college grade for all entering students. Normally there will be a level of high school grades and test scores, which you will come to recognize, above which all students would be predicted to do adequately in terms of college grades. There will be another level you will come to recognize below which students will only rarely survive the rigors of your curriculum. Then maybe as many as 20 per cent or so of the students will fall in the borderline area where you will need to calculate the predicted grade in order to have a refined assessment of academic potential. Even here, by a little algebraic manipulation, and by taking advantage of devices such as dropping from consideration the relatively useless third digit of the College Board scores, an equation as simple as V + M + 2 times the high school average can be derived which will result directly in a number translatable into a predicted average grade. For example, the actual prediction equation, developed in this way, at the University of Georgia for students entering in 1960, is 2V + M + 4 HSA. Using this formula, if a student has a resulting number of 240 he would have a predicted average grade at the University of 2.0, a C average. He would have 52 chances out of 100 of making a C or better average, 7 chances out of 100 of making a B or better average, and less than one chance out of 100 of making a straight A average. This student might have had a B high school average and College Board scores both of 400. You can see how easy it is to use this kind of formula: A V of 400 becomes 40, times 2 equals 80. An M of 400 is another 40; added to the previous amount it becomes 120. Four times HSA of 30 is another 120, making 240. All that computation is usually done in your head, and a table carries you from 240 to the predicted average grade and probabilities of success.

Aiding Counselors

The nice thing about this approach is that it provides a good way to disseminate the prediction data to high school counselors and others who are interested in helping people to evaluate their own academic potential. Colleges become concerned about revealing themselves to the public. In some respects they have good reason to be concerned. However, the college which believes that by revealing in public the caliber of its student body, it will become branded and will never be able to raise its standards, cannot justify this position anymore than a gardener can justify refusing to tell the owner of a new home what kind of lawn seed he is going to use, what kind of fertilizer he is going to use, and how he will proceed to develop a fine lawn. No parent should be asked to send a child to a college where the administration will not reveal both the caliber of the faculty, as well as it can, and the ca caliber of the students. Parents have a right to know something about what they are buying. They should be very leary of a vendor who is secretive about what he has to sell. No self-respecting educator can endorse a policy of, "Let the buyer beware."

While the college is obligated, in my opinion, to describe itself to parents and to counselors of prospective students, it is not obligated to provide information which is misleading. It is misleading to a great many people for a college to tell them what the average College Board scores are or what the mean high school grade is. All too often these averages are looked upon as minimum College Board scores and minimum high school grades. This discourages many acceptable applicants.

The college is not obligated to give a complicated regression equation to the counselor or parent. They won't know how to use it.

The college is not obligated to tell the parent a predicted grade for his child or to tell a counselor how to obtain predicted grades. All too often there is no recognition of the fact that these predictions are probability statements, that while a predicted grade may be the best estimate of the student's potential, it is not a perfect estimate.

One device often used by colleges for disseminating information is to give not just the mean on the academic aptitude test scores or high school grades but the entire distributions of test scores and grades at that institution. However, it may very well be that the test score in question is not at all related to academic success at the institution. There are institutions where scores on a particular test are not predictive of success. To give distributions of scores which are unrelated to success only leads the counselor or the parent to make a prediction on a faulty premise.

Even if the test scores and grades on which distributions are given are predictive of success, if there is more than one predictor (as there usually should be), the distribution information doesn't tell a counselor how the various predictions should be combined into one over-all estimate. This has to be done, as I mentioned before, on the basis of multiple regression in order to give the most accurate information.

The same simplification of multiple regression that I described above as being useful in the admissions office is an excellent device for distributing useful information to counselors and parents. Tables using simple formulas to get "index numbers" and providing probabilities of C or better, B or better, or A averages for each index value avoid all the problems I have just described. This is what is done in the State of Georgia for all colleges in the state. Anothe way to accomplish the same thing has been developed at Tulane under the direction of Dr. Cliff Wing, who will speak to you this evening. Dr. Wing provides a set of tables which can be entered by knowing the College Board scores and high school rank in class. The result of entering the table is the probability at Tulane of obtaining a C+ or better grade. Accompanying the table are statements of the probability of admission for various probabilities of C+ or better. Illustrations of both techniques appear in the materials which were given to you when you registered for the conference. A description of the procedure involved in modifying and simplifying prediction equations to obtain the tables I have described is now being prepared for publication. However, given the problem, any of your college mathematics faculties could come to the same result I have if you explain to them what you desire. Perhaps they can even improve on anything we yet have available.

Summary

To summarize, there is nothing unfair about a college being selective in its admission of students. However, the selection should be according to carefully developed and implemented goals. The goals should be chosen for academic and educational reasons rather than economic or personal reasons. The selection of students should be based primarily on academic promise.

Many procedures commonly used in academic assessment are of doubtful value. The interview is perhaps the most flagrant in its widespread use and uselessness for assessment. Naive allowances for high school size or quality are also common, but their value has not satisfactorily been generally demonstrated except, perhaps, when high school grade is used alone as a predictor of college grade. We are probably making a mistake in our requirements about high school academic units for admission to college. You should prove at your own institution that number and/or pattern of high school academic units are related to college grades, or else unit requirements are an artificial barrier at your college and should be dropped or justified on a basis other than they they are important for academic success in college. You can't find out about such things without conducting institutional research, as it has come to be called, on your students.

In combining relevant data into assessments, an actuarial, statistical procedure is recommended as opposed to armchair evaluations by an individual admissions officer or a committee. Simplified assessment procedures are available which also lend themselves to use for college counseling at the high school level.

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CORRELATES OF ATTRITION AND ACADEMIC SUCCESS

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The work which I am reporting does not in any sense represent a completed study, but rather, it is the current status of what can be called a continuous monitoring of selected characteristics of our students with the ultimate goal of improving selection techniques. It is, in my opinion, the general sort of thing that every school should and can do in an objective and systematic fashion, and I emphasize these words, for herein lies the value of the results and also, incidentally, the frustration that the empirically-oriented investigator will often encounter. Never one with a quick answer or off-the-cuff opinion, the researcher is often subjected to the remarks and opinions of some of his colleagues who possess a luxury that an investigator cannot indulge in, namely: the freedom to make subjective statements as if they were fact rather than opinion. To those who freely toss off generalities, or who emit subjective impressions with strong conviction, the empirical investigator must seem a dull clod indeed with his guarded, often noncomittal replies, accompanied by seemingly endless qualifications, probability statements and what not. But then when the empiricist is finally willing to make a strong statement, on the basis of his well defined, objective, and properly analyzed data, it is disconcerting to have someone say, "I don't care what your findings indicate, I still say . . ." Indeed, it is almost as disconcerting to have someone say, "I agree with you," as it is to have them say, "I disagree with you." For the data being reported are not themselves things to be "agreed upon" although their interpretation, to be sure, is often subject to debate. The disconcerting thing about these reactions, however, is that they indicate that the individuals involved are placing as much value on their subjective impressions, which may never have been subjected to empirical validation, as they are on evidence of an objective sort.

In addition to this sort of frustration other problems often arise when the investigator attempts to communicate his findings. For example, does the following sound familiar?

> Investigator: "We have found that the Verbal Score is highly related to academic performance."

> Critic: "Well, now, how about Mary Jones? She had one of the highest Verbal Scores I've ever seen, and yet she flunked out before the end of her sophomore year."

This sort of question is important in that it suggests the critic's lack of understanding for what the investigator has said, and probably is associated with the presence of several other misconceptions. What the investigator is saying, of course, is that if you have a population of people with high "verbal ability" they will on the average be superior in their academic performance to a population with low "verbal ability." This certainly does not imply that all of the members of the "high verbal" population will be superior to all of the members of the low. What it does imply is that you will have a greater percentage of successful academic-performers among high scorers than you would among low scorers on this verbal test.

Another sort of problem arises with a fairly common response to statements concerning systematic utilization of test scores or statistics in admissions, namely: "You can't reduce people to statistics. You've got to deal with the individual as a person." Well, I'm not going to advocate that we ignore the individual, nor am I even going to say that some people can't give good advice and make good "predictions" of behavior based on all that they know about a person. However, by using validated prediction devices in selection contexts you can treat the individual more fairly as a statistic than you may be able to do in any other way. Let me try to illustrate this. Suppose, for example, that you have 400 applicants from which to choose a freshman class of 200. The admissions committee, after agonizing appraisal, makes this selection and retires to nurse their aggravated ulcers. Now for the sake of illustration let us suppose that out of this applicant population there were 200 students who could have succeeded at this particular college and successfully graduated. Our admissions committee, however (and perhaps the realization of this is what aggravated their ulcers), did not have sufficient data to enable them to select these 200 potential successes. Let's say they picked 100 of them. That is, let's say that 50 per cent of the 200 students they actually accepted left for one reason or another, the typical attrition at a woman's college. Now, someone comes along, and after a great deal of study and statistical analysis, comes up with a prediction device that would increase by, say, 10 per cent, the number of students who would graduate. That is, his device, sans ulcers selects 200 students from this population of 400 of which 120 will graduate rather than 100. The prediction scale, however, has not been dealing with the person as an individual or vice versa, and in its blundering way has actually rejected some of the potential successes that the admissions committee in its blundering way would have accepted. Now immediately a critic may jump on this to support his point that you really must deal with people as persons, or whatever that phrase is supposed to be. But, let's go back to being "dull clods" again and analyze the situation. There are two general kinds of mistakes that can be made in selection: one is to reject someone who could have been successful, and the other is to accept someone who will not be successful. And these are not just mistakes from the point of view of the school; they are also mistakes and disservices to the individual student. The admissions committee rejected 100 potential successes and accepted 100 potential drop-outs making a total of 200 mistakes. The prediction device only rejected 80 potential successes and accepted 80 potential drop-outs making a total of only 160 mistakes. That is, while increasing the number of successful graduates by 10 per cent it has reduced the number of mistakes by 20 per cent. Assuming a similar selection context in the future, this 2:1 ratio will tend to hold. Whenever you replace a potential success with a potential drop-out you increase your successful acceptances by 1 while decreasing your mistakes by 2. Which procedure, then, is being fairer to the greatest number of individuals?

Now I am not suggesting that we should do away with our admissions officers or committees. There are, and will likely continue to be, factors which require individual judgments, and decisions which we may not wish to put into a formula. In fact, in some cases these types of decisions are what may enable the committee to reduce even further the mistakes made by the prediction device. For example, a person whose characteristics are such that the prediction device recommends rejection may receive a recommendation from his guidance counselor as definitely being a "risk-worth-taking" due to a late-blooming enthusiasm. Well, in this sort of case someone must make a decision as to which piece of evidence they want to give the most weight. At the present stage of our technological development and knowledge, human beings can probably make these decisions better than machines. So we need not fear that research findings are going to place admissions officers on the unemployment roster.

Let me sum up my introductory remarks by saying that we should base decisions regarding admissions, and many other aspects of our world for that matter, insofar as possible on objective well-validated evidence. Particular factors employed in assessing the applicant's academic potential (e.g., school record, verbal test scores) should not be adopted as means for selecting students at any given institution until they have been clearly demonstrated to be related to some measure of success at the particular institution where they will be used. What I am saying is that we must ascertain the predictive validity of our screening devices and not just choose them because they sound good, or because we think they will work, or even because someone else has found them to work, because there may very well be significant institutional differences with respect to the predictive value of certain variables.

The Hollins Studies

My introductory remarks should indicate that I personally feel more comfortable with data than without it, and hence, I intend to spend the rest of my time talking about our actual findings. Many of these will, of course, be specific to our particular college while others may be more general. But regardless of their applicability to your own circumstances I do hope they serve to illustrate the kinds of variables that may be fruitful to investigate as valuable additions to your selection procedures.

Another point that should be mentioned briefly here is that these results are for the people we accepted, and of course, given the nature of the situation this is the only thing that could be done. But it should be pointed out that these selective conditions do not fulfill the ideal requirements for testing the predictive validity of any particular factor. For those factors which we have not been using in selection it probably doesn't make much difference, but for those which are already being used in the screening process we will not be able to find the true strength of the relationship to our criteria. If there is a simple linear correlation between our selection variable and our criterion measure, and if students below a certain point on the selection variable are already not being accepted, then our findings will underestimate the strength of the true relationship. Nevertheless, as I say, this is about the best that we can do, and at least we can get some idea of the factors related to success even if we can't accurately measure the degree of this relationship.

Criteria Employed

Let me begin then by defining our criteria of success. There are two: completion of the four-year program and academic performance, both of which are open to criticism. In defense of the choice of these criteria let me point out that attrition poses a serious problem in a woman's college; in the four years studied so far we have lost prior to graduation, but mostly by the end of the sophomore year, over 47 per cent of the students who were accepted. I have not studied the reason for their leaving, but I believe it can be established that the great majority of them did not leave due to academic failure. In defense of this criterion, then, it can be said that for a number of reasons we (like most institutions!) would like to have a larger percentage of students complete our four-year program. Some of these are the financial and recruitment problems this high attrition presents to the school, the investment of faculty time in students who go elsewhere or never finish at all, and the frustration imposed on the faculty of being overloaded with introductory and lower-level courses as compared with the advanced levels. The other criterion, academic performance, has been measured in terms of the over-all grade average during the student's tenure at Hollins (hereafter referred to as the Merit Point Ratio, MPR). In defense of this criterion, it can be argued that in the long run we would rather have students with B and B+ averages than students with C and C+. (Also it is easily obtainable whereas desirable alternative criteria such as industriousness, maturity, creativity, etc., are at the present time going to be much more difficult to measure.)

Selected Findings

With these as our criteria then we have attempted to ascertain variables which are related to them and which are obtainable at the time the student is applying for admission. The goal is not to develop a prediction device that will replace the admissions committee, but, rather, will enable it to make judgments based on more objective data than is currently available to them. It is also to be hoped that the findings of such an investigation will help to counteract the various hunches, preconceptions, and even biases to which we are all subject.

Background Variates

We will begin with some general background factors and proceed to some of the more intellectual factors. In Table 1 we have some highly significant findings based on the past four years which indicate that our best students in terms of both criteria come from Virginia. Their attrition rate is below that of all other groups and their academic performance is significantly superior. Students from the remainder of the South and Southwest do not perform as well on the average. But we do not wish to take all of our students from Virginia alone, and it is also clear that the "Other" students (mostly from the North and Midwest) are not doing too well academically; their Merit Point Ratio (MPR) is significantly lower than that of the other two groups.[1] Yet here is where a change in recruitment practices might very well alter the picture; e.g., rather than change admissions practices to exclude applicants from say, Northeastern states, it would seem advisable to change recruitment practices in order to induce the better students from this area to apply.

The results on a somewhat related variable (distance of student's home from Hollins) are presented in Table 2 for the last two years. The results of the statistical analyses for these years lead me tentatively to conclude that there is a trend here in terms of attrition. The further away the student's home from Hollins the less likely she is to graduate. With regard to performance, however, the trend is not at all clear, and I'd like to reserve any decision here until I see more data.

We next turn to an area that is dear to the heart of the Alumnae Office, and low and behold (see Table 3) we do find that the students who have had relatives who attended Hollins are likely to do somewhat better, and, if their

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[1] In these and subsequent univariate comparisons, it should be kept in mind that factors other than the one under consideration have not been controlled -- e.g., groups from different regions in this comparison may differ on the average in SAT-Verbal scores.

Table 1

GEOGRAPHICAL LOCATION OF STUDENT'S HOME
(1959-1962)

	Virginia	South and Southwest	Other
Number of Cases	(118)	(311)	(370)
MPR* (Mean)	1.77	1.59	1.44
Per cent Graduating	72%	42%	56%

*Merit Point Ratio, based on A = 3.0; B = 2.0; C = 1.0.

Table 2

DISTANCE FROM HOME (IN MILES)
(1961-1962)

	0 -199	200 -299	300 -399	400 -499	500 -799	800+
Number of Cases	(106)	(61)	(67)	(67)	(74)	(41)
MPR	1.65	1.50	1.59	1.38	1.44	1.43
Per cent Graduating	63%	57%	54%	57%	31%	41%

Table 3

ALUMNAE RELATIVES
(1959-1962)

	None	Immediate Family	Others
Number of Cases	(608)	(73)	(124)
MPR	1.51	1.63	1.68
Per cent Graduating	52%	63%	51%

relatives were from the immediate family, may even be more likely to graduate than non-alumni-related students.

The relationship between the marital status of the parents to our two criteria is shown in Table 4, and while it appears that those who come from a "normal" home may be more likely to graduate, the difference with these N's is not sufficiently large to be significant. There is certainly no difference in their performance. This information should be of interest to someone who might speculate that students from "broken homes" are more likely to fail in college.

Years of formal education (total -- both parents) was investigated in two samples (classes of 1959-60 and 1961-62, respectively) but no significant relationship with either criterion was found.

Father's occupation, categorized as shown in Table 5, yielded differences which are not significant, even though they look rather large, probably due to the small number of cases in the "Sales" and "Other" categories. Likewise, whether mother works or is a homemaker appears to hold little promise as a useful predictor variable in relation to the criteria under consideration here (data not shown).

The number of siblings shows a significant relationship to attrition (Table 6) with the only child being more likely to graduate. The data suggests that there may very well be a trend here (in relation to attrition), but there is no significant trend with respect to our other criterion, academic performance (MPR).

The criterion measures for students graduating from private or public high schools are quite similar (Table 7). The private school student, or the public school student (depending on which side your biases run) may get a better education but this differential certainly does not manifest itself in college performance at least among the representatives of these respective school groups attracted to Hollins.

The differences between those who are interested and those who are not interested in our foreign study program are not dramatic, but interesting (see Table 8). They are sufficiently close towards being statistically significant to warrant further scrutiny. The reason I say they are interesting is that the two categories yield opposite effects on our criteria. Those interested are more likely to graduate, but not do as well academically. But, as I say, these are small differences and more study is needed before conclusions are are drawn.

The scholarship applicants turn out to be a significantly superior group, as we might expect, and to a considerable extent they also are more likely to graduate (Table 9). This latter finding might be an artifact, however, due to the proviso that if a scholarship student leaves for insufficient

Table 4

MARITAL STATUS OF PARENTS
(1961-1962)

	Living and Together	Other
Number of Cases	(357)	(61)
MPR	1.51	1.48
Per cent Graduating	53%	46%

Table 5

FATHER'S OCCUPATION
(1961-1962)

	Professional	Manager & Officer	Sales	Other
Number of Cases	(133)	(204)	(40)	(23)
MPR	1.50	1.50	1.48	1.73
Per cent Graduating	47%	50%	60%	70%

Table 6

NUMBER OF SIBLINGS
(1959-1962)

	Number			
	0	1	2	3+
Number of Cases	(113)	(331)	(205)	(137)
MPR	1.63	1.54	1.53	1.50
Per cent Graduating	67%	52%	54%	47%

Table 7

SECONDARY SCHOOL
(1959-1962)

	Graduated from	
	Public	Private
Number of Cases	(337)	(466)
MPR	1.58	1.52
Per cent Graduating	53%	52%

Table 8

HOLLINS ABROAD
(1960-1962)

	Interested in Program	
	Yes	No or ?
Number of Cases	(225)	(348)
MPR	1.49	1.57
Per cent Graduating	59%	51%

Table 9

SCHOLARSHIP APPLICANTS
(1959-1962)

	Applicants	Non-Applicants
Number of Cases	(93)	(710)
MPR	1.83	1.51
Per cent Graduating	74%	50%

reasons before graduating she is obligated to pay back the amount of her scholarship, or to the possibility that better academic prospects are awarded scholarships. Notice that we are studying scholarship applicants and not necessarily scholarship recipients because we are interested in developing a prediction device based on information that is available at the time the student applies for admission. A scholarship award would not be known at that time.

Tables 10 and 11 are based only on this year's graduating class due to the fact that the forms from which this information was obtained were just put into use four years ago. Both of them look very encouraging, however, as predictors of academic performance. The differences between the extreme means in each case are among the largest we have yet discovered. I will certainly be very interested in seeing if this trend continues.

Intellective Factors

Now with Tables 12a and 12b we begin our consideration of intellectually-related factors. The data are broken into two parts due to a change in our high school percentile categories. There was a very definite and significant trend in the classes of 1959 and 1960 between percentile rank in high school and Merit Point Ratio, but it is not as marked in the next two classes. In neither case, however, is the high school rank related significantly to attrition. An interesting sidelight in this table is that a number of schools refuse to rank their students, many with the argument that all of their students are good, select, superior, etc. Well, these data indicate that they are just about average in their college performance, although they may be somewhat more likely to graduate.

For Table 13 an approximate high school average was obtained by giving all C's a weight of 1.0, all B's a weight of 2.0, and all A's a weight of 3.0 and then dividing by the total number of grades. We only have these data on the last two years, but there certainly seems to be a strong relationship here to college performance, although not to attrition.

The College Board English Composition Test score is related to attrition with those below 500 being less likely to graduate and those above 600 being more likely to graduate than the over-all population (Table 14). Its relationship to performance, however, is not straightforward; those above 550 are more likely to do better, but below this it doesn't make much difference.

Similarly the SAT-Mathematics score (SAT-M) shows a significant over-all relation to attrition, but the big boost to the Merit Point Ratio only comes with higher scores (Table 15).

Table 10

MOTIVATION
(1962 Only)

	Median Rating on Personality Record		
	Purposeless or Vacillating or Usually Purposeful	Effectively Motivated	Highly Motivated
Number of Cases	(39)	(112)	(62)
MPR	1.19	1.53	1.72
Per cent Graduating	46%	55%	52%

Table 11

PRINCIPAL'S ESTIMATE
(1962 Only)

	Estimate of Future Success on Personality Record		
	Little Success or May Encounter Difficulty or Average	Above Average	Superior
Number of Cases	(68)	(105)	(31)
MPR	1.32	1.53	1.99
Per cent Graduating	56%	50%	55%

Table 12a

RANK IN HIGH SCHOOL CLASS
(1959-1960)

	High School Percentile				
	0-49	50-74	75-89	90-100	None*
Number of Cases	(70)	(76)	(88)	(73)	(69)
MPR	1.23	1.50	1.77	1.96	1.59
Per cent Graduating	49%	46%	56%	58%	62%

*School refuses to rank students.

Table 12b

RANK IN HIGH SCHOOL CLASS
(1961-1962)

	High School Percentile					
	0-19	20-39	40-59	60-79	80-100	None*
Number of Cases	(21)	(46)	(52)	(107)	(144)	(46)
MPR	1.31	1.40	1.27	1.46	1.68	1.57
Per cent Graduating	48%	59%	52%	51%	49%	59%

*School refuses to rank students.

Table 13

HIGH SCHOOL GRADES
(1961-1962)

	High School Average				
	.00-.99	1.00-1.49	1.50-1.99	2.00-2.49	2.50+
Number of Cases	(29)	(69)	(112)	(119)	(85)
MPR	1.27	1.29	1.44	1.56	1.84
Per cent Graduating	55%	54%	53%	56%	52%

Table 14

ENGLISH SCORES
(1959-1962)

	449 & below	450 -499	500 -549	550 -599	600 & above
Number of Cases	(91)	(118)	(161)	(167)	(199)
MPR	1.42	1.48	1.42	1.58	1.77
Per cent Graduating	45%	45%	53%	53%	60%

Table 15

MATHEMATICS SCORE
(1959-1962)

	399 & below	400 -449	450 -499	500 -549	550 & above
Number of Cases	(190)	(163)	(205)	(156)	(86)
MPR	1.43	1.46	1.56	1.61	1.90
Per cent Graduating	44%	52%	58%	56%	59%

Table 16

VERBAL SCORE
(1959-1962)

	399 & below		400 -499	500 -599	600 & above
Number of Cases	(86)		(341)	(269)	(98)
MPR		1.41		1.65	1.98
Per cent Graduating		49%		54%	63%

Finally, in Table 16 the SAT-Verbal score (SAT-V) shows a significant relationship to attrition and a very strong significant relationship to college grades. One is tempted to speculate here that perhaps our grades are based more upon the student's verbal ability than they are upon her knowledge of the subject matter, or perhaps it is the subject-matter-knowledge that leads to verbal fluency.

Well, so much for the scrutiny of these individual factors. I have summarized my conclusions in Table 17 for easy reference; the comments regarding the relationship of each factor to each of the two criteria run on a scale as follows: very probably related, probably related, possibly related, probably not related. They represent my judgment based upon the analyses of the data we have collected up to the present time.

Need for Multivariate Analyses

Now, so far we have only been considering our variables one at a time, and as suggested earlier, it is quite conceivable that the world is far more complex than the single-variable analysis is assuming. It is, of course, quite possible that there exist interactions among our variables so that the effect of one variable is not independent of the effects of one or more other variables. For example, let us suppose that a person from a private school with a high SAT-Verbal score (SAT-V) has a slightly higher probability of graduating than a person from a private school with an average SAT-V score while a person from a public school with a high SAT-V score has a much greater probability of graduating than a person from a public school with an average SAT-V score. In such circumstances, the influence of the Verbal score on the probability of graduating is not independent of the type of school that the student came from. It should also be pointed out that a variable may show no significant contribution by itself but still be involved in an interaction and thereby contribute to the performance criterion. Furthermore, interactions are not limited to just two variables at a time; any number of variables may be involved.

It should be obvious, then, that this possibility can introduce extreme complications. There are 18 variables under scrutiny in this report. If I wished to study all possible pairs, it can be demonstrated that I would have to make 153 comparisons; if I wished to study all possible combinations of 3 at a time, there would be 816 comparisons to make. Well, obviously, without a high speed computer this becomes unreasonable, and even with a computer there would be a tremendous amount of data to consider. An alternative is to select a few variables merely on the basis of a hunch. I've done a little of this, and the results are shown in Table 18. At the top we have the scholarship applicants broken down by region and it can be seen that while the over-all percentage graduating is 74 per cent, this figure rises to 84 per cent for students from Virginia and drops to 66 per cent for the "Other"

Table 17

SUMMARY OF RESULTS

Variables	Criteria	
	Successful Completion of College	Academic Performance
Geographical region	very probably related	very probably related
Distance from home	very probably related	possibly related
Alumnae relatives	possibly related	probably related
Parental marital status	probably not related	probably not related
Parental education	probably not related	probably not related
Father's occupation	possibly related	possibly related
Mother's occupation	probably not related	probably not related
Number of siblings	probably related	probably not related
Secondary school	probably not related	probably not related
Hollins abroad	possibly related	possibly related
Scholarship application	very probably related	very probably related
Motivation rating	insufficient info.	probably related
Principal's estimate	insufficient info.	probably related
Rank in H. S. class	probably not related	probably related
Grades in H. S.	probably not related	very probably related
English score	very probably related	very probably related
Math score	very probably related	very probably related
Verbal score	very probably related	very probably related

Judgmental scale based upon analyses of data to present time:

1) very probably related
2) probably related
3) possibly related
4) probably not related

Table 18

SELECTED MULTIVARIABLE CLASSIFICATIONS
(1959-1962)

Scholarship applicants

Region	N	Per Cent Grad	MPR			
			Grads		Non-grads	
			N	$\overline{X}$	N	$\overline{X}$
Virginia	31	84%				
South & [illegible]	23	74%				
Other	38	66%				
Applicant total	92	74%	68	2.02	24	1.31

Non-applicants

Region	Verbal Score	N	Per Cent Grad	MPR			
				Grads		Non-grads	
				N	$\overline{X}$	N	$\overline{X}$
Virginia	500+	39	67%	26	1.86	13	1.95
	-499	47	70%	33	1.56	14	1.31
South & Southwest	600+	26	50%	13	2.03	13	2.00
	500 -599	94	45%	42	1.87	52	1.51
	-499	142	31%	44	1.60	98	1.35
Other	600+	35	54%	19	1.90	16	1.45
	500 -599	108	55%	59	1.70	49	1.22
	-499	200	54%	109	1.49	91	1.08
Non-applicant total		691	50%	345	1.66	346	1.33
Over-all total		783	53%	413	1.72	370	1.33

category. These N's are small, however, and we will need to continue adding data as our classes graduate. In the bottom of the table we have the non-scholarship applicants broken down both by region and by Verbal score. As you can see, this sort of analysis has resulted in some interesting and very important discoveries. Notice, in particular, the disclosure of an extremely poor-risk group; of the 142 students from the South (outside Virginia) and Southwest with Verbal scores below 500 only 31 per cent graduated. This means that if the admissions office automatically rejected every single person in this category, they would be "right" 7 out of 10 times, if major institutional concern is for "graduation" potential of applicants.

These data demonstrate the interactions I was just discussing. Notice that the Verbal score for students in the "Other" category does not show any relation to attrition while it does show a pretty good relationship for students from the South and Southwest. Hence, Verbal score and region do not have an independent effect on attrition.

One can also see on the right hand side of this table evidence for a point made earlier. Most of our students do not leave due to academic difficulties. The average MPR's for all groups who leave (labelled Non-grads) are above C (i.e., 1.0) and the over-all average for all 370 non-graduates is almost a C+ (1.33).

It should be pointed out that a multiple regression analysis would take into account the interactions that I have been talking about, but it would not enable you to spot the particular kinds of poor risks, or highly successful groups as will the multivariable classification shown in this table. Nor are the results yielded by this technique as readily understood as those portrayed in the tables presented here.

I hope that this report has served to suggest the feasibility and the potential value of similar studies for all colleges. The results of inquiries such as the one which has been described are, of course, useful for purposes other than the selective admission of students. Knowledge of the fact that certain identifiable groups of students are likely to contain a high proportion of "drop-outs" should be useful for counseling and as a basis for special efforts to provide opportunities designed to make the institution more attractive.

One final point I would like to bring out is that a campaign to get a greater number of better students to apply; i.e., to increase the quality of the pool of applicants, should yield great dividends. Given a higher level of academic ability in the applicant group, by virtue of the positive relationship between academic ability and retention, the institution might be able to maintain more uniform size for the various classes and more fully utilize facilities by admitting fewer students, but of higher ability than before.

PART IV

RESEARCH RELATED TO THE ADMISSION OF TRANSFER STUDENTS

Presented by

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PROBLEMS OF THE TRANSFER STUDENT

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University of California, Berkeley

There is a growing awareness on the part of college administrators and faculty that an increasing percentage of the new faces appearing on campus each fall and spring are those of students who have attended one or several post-high school institutions before matriculating on the campus which will eventually award the baccalaureate degree. Many of these new students are adults whose undergraduate education was interrupted by military service, marriage and motherhood, or the lure of a well-paying job. Others are "roving scholars" who move from one campus to another in pursuit of an education--from a commuter to a residential college, from a two-year to a four-year institution, from a small liberal arts college to a major university, or vice versa, seeking a new kind of living arrangement, new academic experiences, a specialized program, and in some cases less fierce competition for grades. Some students transfer with the intent of earning their degrees at the receiving institution, while others are picking up a few extra credits while pursuing some off-campus activity for a temporary period away from their home campuses.

Acknowledgement of the presence of the undergraduate transfer student on campus has not yet been accompanied by any systematic accounting, descriptive analysis, or projection of this segment of the new student population. Each institution has policies governing the admission of such students. One or more times each year the director of admissions considers and admits an unknown number of new transfer students under these policies. An evaluation of previous college work is performed for each transfer student in one or more offices on campus to arrive at a suitable amount of advanced standing credit after which the transfer student tends to become just one more set of identification digits in a large population of IBM cards, indistinguishable from the "native" who began his work at the institution as a freshman.

The focus of attention today, as it has been in the past, is on the prospective freshman enrollee. He is studied from all angles before admission and is tested, counseled, entertained, oriented, advised, registered, and in other ways singled out for special attention during his first term (or until a new group of freshmen arrive). Often his high school principal and/or counselor are offered an accompanying set of divertissements. Enrollment predictions are based almost exclusively on new freshmen and experience tables are developed through use of retention data for freshmen admitted from high school. If transfer students are counted at all, they tend to be lumped into one meaningless figure representing all class levels (including "almost new" freshmen and graduate students); in-state and out-of-state, resident and non-resident, and foreign students; "visitors" and degree candidates, part-time and full-time students; from all types of post-high school institutions.

Selected Transfer Statistics

A study of transfer students from two-year colleges is currently being conducted by the Center for the Study of Higher Education at Berkeley. As part of the institutional data collection an attempt is being made to assemble information about the total undergraduate transfer group at each of the forty participating senior colleges and universities. Only in rare instances is such information available in annual enrollment reports or other statistical documents in a form which is useful either in the transfer study or in local educational planning and evaluation involving the transfer student.

Public institutions in California are a notable exception to this dearth of information about transfer students, due perhaps to the highly developed art of enrollment projections which is a vital part of planning in California. In the fall of 1960, for example, the 14 California state colleges admitted and enrolled 10,512 new full-time and 5,032 new part-time transfer students at the undergraduate level. They also admitted 12,515 new first-time freshmen who were pursuing their studies on a full-time basis and 1,224 such students on a part-time basis. Of the full-time undergraduate transfer students, 70 per cent were admitted from California junior colleges, 14 per cent from out-of-state colleges and universities, and the remaining 16 per cent by transfer between state college campuses, from independent colleges in California, and from the University of California, in that order. Almost half of the full-time undergraduate transfer students were admitted with junior standing, only 13 per cent as freshmen. Approximately one third of this group had sophomore standing at admission and only a small percentage had senior standing.[1]

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[1] Almost 10,000 new graduate students were also admitted to the state colleges during this same enrollment period, more than 80 per cent on a part-time basis. It should thus be obvious that the gross total of 24,990 new transfer students to the California state colleges in the fall of 1960 is a relatively meaningless figure for educational planning and study, without information about their distribution in the categories cited. The detailed data are compiled and reported for each college separately. Information is also available concerning the number of students of each type transferring from specific colleges within the state and from the various states. Similar reports are prepared by the University of California, although all students are classified as full-time at the University.

Less complete information is contained in the annual report of the registrar for a major state university in the South in which a gross total of 3,213 students were reported as admitted in 1960-61 from other colleges -- 45 per cent from in-state senior colleges, 28 per cent from in-state junior colleges, 25 per cent from out-of-state senior colleges and universities, and the remainder from out-of-state junior colleges. The only information available with respect to class level is that at least 330 of the more than 3,000 new transfers were bona fide graduate students. Unknown is the class level of the remaining 2,883 students (some of whom may be taking post-baccalaureate degree work without formal graduate standing) or their status as part-time or full-time enrollees. A request for clarification of the junior college transfer figures resulted in the finding that 43 per cent of this group was admitted with freshman classification, 25 per cent with sophomore classification, and only 32 per cent with junior classification (although most students should have been able to complete a two-year program in the junior college before transferring). A further inquiry led to the information that the transfer designation applies to recent high school graduates who accumulate a few college credits during the summer or in part-time evening programs before enrolling at the university, as well as students who were matriculated at another institution. Thus it is impossible without a considerable amount of additional information to judge whether the Center for the Study of Higher Education project involving 258 junior college transfer students to this university involves a significant portion of the transfer student body in terms of educational planning and evaluation.

Enrollment statistics from Florida colleges and universities fill several volumes, e.g., the Board of Control Report of Enrollment in Florida's Institutions of Higher Learning, Fall, 1960. No mention of the undergraduate transfer student appears in the 103 pages of tables and text containing enrollment figures for Florida's 43 institutions. From a 123-page Fact Book for one university we learn only that 737 new undergraduate transfer students enrolled for the first time on campus in the fall of 1960, out of some 1,178 students who applied. The only additional information available from the tables is that (1) 74 per cent of the transfer students were men, (2) the new transfer student enrollment for 1960 represented a 28 per cent increase over 1950 (new freshman enrollment increased by one third in the same period), and (3) there was almost no increase in transfer enrollment between 1959 and 1960. In other Florida Board of Control and university reports, however, considerable attention has been given to the phenomenon of transfer from junior to senior colleges over a long period of years, with the objective of providing information concerning the academic records which junior college transfer students make in degree-granting institutions during the fall term after transfer.

At a relatively small state college in the region, transfer student statistics on file in the registrar's office show that in the fall of 1960 a total of 233 undergraduate transfer students were admitted from 53 different colleges and universities -- 29 in-state colleges and 24 out-of-state institutions. Of the 197 transfers from in-state institutions, 83 per cent came from junior colleges. Approximately one half of the students transferred with junior standing. One fourth of the students had attended two or more colleges before transferring to the state college. Here the junior college group appears to be the significant transfer group to be studied on this campus. Transfer student statistics for the state university compiled from several sources seem to show that a significant portion of the undergraduate student body began their college work at another institution. A study of sophomores made in the spring of 1957 showed that 47 per cent of the 1,200 students in the group had transferred to the university, about equally from public junior colleges in the state, public four-year institutions in the state, private colleges and universities in the state, and out-of-state institutions. A study of students classified as juniors made at the university some five years earlier showed that only 39 per cent of the juniors were "natives" who had done all of their work on the university campus. The largest component of the junior level transfer group at that time came from out-of-state institutions.

The Center study was undertaken on the assumption that the transfer student from junior college represents an increasingly important segment of the undergraduate student body in colleges and universities located in states where junior colleges are firmly established. The assumption has proved to be difficult to document with enrollment statistics although the need for a comprehensive study of the performance of transfer students had seldom been doubted by the participating institutions.

Review of Studies

The academic performance of the transfer student from junior college appears to have been subjected to considerably more study than any other topic in the vast research area of transfer student problems. A lengthy bibliography of such studies (usually unpublished) could be compiled, including doctoral theses, institutional research projects, accreditation studies, and educational agency investigations. In lieu of this seemingly unproductive activity, a coordinated set of studies will be cited which were performed for Medsker (1960) for his book, The Junior College: Progress and Prospect.

Sixteen colleges and universities in seven states cooperated in 1956 with Medsker in analyzing the performance and retention over a two-year period of transfer students from junior colleges. The studies involved samples of junior college and "native" students classified as juniors in the fall of 1953 -- the transfers having been admitted with junior standing and the natives having earned it at the institution after two or more years of work. Briefly, the data show (1) that the transfer students did somewhat less well than the native students during their first semester after transfer, but (2) by the end of the senior year the transfer students who were still enrolled earned grades which were about as high as those earned by native students. However, the retention of transfer students was lower than that of native students and a smaller percentage of transfer students completed their baccalaureate degree programs "on time," i.e., two years after transferring as juniors.

The model adopted for use in Medsker's study had been replicated at innumerable institutions, by junior and senior college personnel. The general findings vary only incidentally from study to study, from institution to institution. The observation is frequently made that differences between junior colleges in the quality of preparation of their transfers are significant but little substantiating statistical evidence is available on this point. More worthy of attention are other, usually unpublished, studies of factors related to the performance of transfer students, descriptive characteristics of transfer students which may be related to patterns of mobility, and comparative evaluations of the achievement of particular educational objectives by transfer and native students. Several "model" studies made in California institutions have been selected for presentation as examples of promising research on transfer student problems as an alternative to the approach of classifying and summarizing all available studies on the topic, in the belief that the latter approach would be both repetitious and unproductive.

University of California Studies

California has for many years been one of the relatively few states permitting selective admission at the freshman level to both the state university and the state colleges. At the same time a strong system of junior colleges has grown up with the philosophy of the "open-door" admissions policy. A critical operating assumption in this arrangement of differing admission policies is that students denied freshman admission to either the university or state colleges may establish their eligibility by demonstrating their capacity for satisfactory college work at a junior college. However, rules of the Academic Senate of the university require that the Board of Admissions "maintain the standard of preparation required of students who enter the University directly from accredited secondary schools of California," in the matter of admission of transfer students. Continuing studies have been made by the Office of Relations with Schools of the relative success of transfer students judged to have been "eligible" and "ineligible" for freshman admission directly from high school, in order to establish appropriate standards for admission with advanced standing.

While most studies have involved only junior college transfers, since they are the largest segment of the transfer group, standards apply to transfer students from institutions of all types. Routine follow-up studies of non-junior college transfer students have generally validated this approach.[2]

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[2] For a more complete discussion of the philosophy and requirements, see Selection and Retention of Students in California's Institutions of Higher Education. (Prepared for the Master Plan Survey Team and the Liaison Committee of the Regents of the University of California and the State Board of Education), Sacramento: California State Department of Education, 1961.

Prior to 1957 transfer students who had earned at least 60 units of credit in a junior college or other institution with a grade-point average of C or better were admitted to the University without regard to their admissability as freshmen, providing all requirements for junior standing in the University had been met. Analysis of the performance of transfer students classified on the basis of freshman eligibility showed that the "ineligible" group was less successful after transfer than the "eligible" group,[3] in terms of post-transfer grade-point average, percentage earning averages below C in the first semester after transfer, attrition, and graduation after four semesters at the University. In one such analysis, the performance of approximately 400 transfer students with junior standing, only half of whom would have been eligible for freshman admission to the University, was studied in relation to a group of 864 "native" students with junior standing over a period of four semesters. All transfer students from junior colleges entering with junior standing in a particular semester were included in the study, together with all native students achieving junior standing at the same time. The major findings of the study are the following:

1) Only 56 per cent of the "ineligible" group persisted for four semesters after transfer, compared with 77 per cent of the "eligible" group and 80 per cent of the "native" student group.

2) The median grade-point average for the first semester for the "ineligible" group was 1.07 (C=1.00); for the "eligible" group, 1.45; for the "native" group, 1.63.

3) At the end of the fourth semester after transfer, the "ineligible" group which was still enrolled earned a grade-point average of 1.60; the "eligible" group, 1.84; the "native" group, 1.78.

4) After four semesters of post-transfer work, 35 per cent of the "ineligible" group earned the baccalaureate degree, compared with 57 per cent of the "eligible" group. By the end of the seventh post-transfer semester, 54 per cent of the "ineligible" group had earned the degree, compared with 76 per cent of the "eligible" group.

5) An analysis of the junior college and University performance of more than 2000 transfer students classified as ineligible for freshman admission, including the 1953 group, showed that students earning a grade-point average below 1.4 (C+)

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[3] Briefly, applicants for freshman admission are required to earn a B average in high school in nine academic, year-long courses taken according to a prescribed pattern during the last three years in high school.

> in junior college work had less than a fifty-fifty chance of earning a grade-point average of C at the University in their first semester after transfer.

As a result of the continuing study of transfer students, new admission standards were adopted in 1957 which required students who would have been ineligible for freshman admission to earn a grade-point average of 1.4 on 60 units of junior college work or to earn an average of 1.4 on 30 units if a "satisfactory" Scholastic Aptitude Test score is presented. Studies of students admitted under the new standards have tended to validate the adoption of the requirement of an average of C+, in that the performance of the "ineligible" group after transfer approximates that of the "eligible" group, in terms of satisfactory grades, retention, and graduation.[4]

Similar studies were performed in various state colleges, where freshman admission standards require that an applicant earn at least seven grades of A and B in year-long courses taken during the last three years of high school, without respect to pattern. Results were similar to those found for University transfers although the standard was adapted in 1961 which required transfer students ineligible for freshman admission to earn at least 60 units of college work before transfer to a state college with a C average. Validation studies will be undertaken to determine whether or not a higher grade-point average should be required, in addition to the requirement of 60 units before transfer. The model appears to be an appropriate one for four-year colleges which are adopting or increasing selective freshman admission standards. At present, senior colleges which are unselective at the freshman level tend to ignore the high school record of applicants with as few as six units of college work. As these institutions become selective, through the adoption of admission standards or counseling, they will undoubtedly find it desirable to study the high school record of transfer students in relation to their college performance.

Study of Graduating Seniors

An analysis of students receiving the baccalaureate degree in June 1957 from nine California state colleges was made in the Educational Planning Office of the Division of State Colleges, California State Department of Education (1958), in order to find out the composition of the graduating class in terms of percentages of native and transfer students and the differentiating characteristics of the two groups. A brief questionnaire was administered to more than 3,700 graduating seniors during their last term, at the time of final graduation checks, in order to secure the students' views of their educational planning, choice of major and vocation, reasons for transfer, problems encountered in transferring, plans for graduate work, and perception of their academic standing. Questionnaire data were supplemented with aptitude test scores and other academic data supplied by the colleges.

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[4] Requirements have subsequently been modified to eliminate the provision for transferring with only 30 units and the "60 unit" requirement has been lowered to 56 units.

A few of the results which appear to have significance for educational planning by the colleges are the following:

1) Fifty nine per cent of the graduating seniors had transferred to the state colleges with advanced standing; only 41 per cent of the graduates were "native" students with four years at the college granting the baccalaureate degree (not always in continuous attendance).

2) Two thirds of the graduates were men, although men comprised only 55 per cent of the total regular session enrollment. The percentage of men in the transfer graduating group was 68; in the native group, [illegible]

3) More than 60 per cent of the transfer students in the graduating group attended a junior college before transferring to the state colleges. The next largest group of transfers (18 per cent) came from institutions in other states. The remainder transferred from the University of California, independent colleges in California, and other California state colleges.

4) Transfer students from the various types of institutions were represented in the graduating group in about the same proportions as were found in the new transfer group which was admitted to the state colleges at that time.

5) Students with relatively low academic aptitude test scores were found in the graduating groups of native and transfer students in about the same proportions as in the new student groups. However, both the new and graduating groups contained fewer students with low aptitude scores than the national norm group with which comparisons were made.

6) Only one fourth of the transfer students, compared with one half of the native students, had been able to make steady progress toward graduation without a major break in their programs. The break in the degree program for transfer students usually came just prior to transfer to the state college.

7) Eighteen per cent of the transfer students reported having

earned the equivalent of at least one extra semester of credit, compared with 9 per cent of the native student group.

8) Sixty one per cent of the native group and 67 per cent of the transfer group reported no change in major since entering college. Twenty six per cent of the total group reported one change in major; 6 per cent, two changes.

9) Twenty four per cent of the transfer students attended two colleges before transferring to the college granting the baccalaureate degree, while 11 per cent attended three or more colleges before transfer.

10) Eighty per cent of the graduates in both the native and transfer groups had some plan for further education beyond the baccalaureate degree. Twenty four per cent expected to stay at the same college after graduation, often to complete the required fifth year for the secondary school teaching credential. The plans of 21 per cent were somewhat indefinite, while 19 per cent stated their intention to take graduate work at another institution (which they named, together with their expected starting time).

While the findings from the senior questionnaire study can scarcely be generalized to institutions in other states, or to other types of institutions in California, the model of the study again appears to be useful in devising local studies to improve educational planning.

Psychometric Studies of Transfer Students

Two California state colleges have conducted rather extensive studies of the performance of transfer students from junior colleges on batteries of aptitude and achievement tests. The same batteries were administered to samples of native students at the same class levels, for comparative purposes. Both colleges require degree candidates to complete 45 units of general education courses in a pattern prescribed by the governing board for the colleges, usually during the first two years of work. The two colleges differ, however, in the organization of the general education program for their native student group. One college has designed a special set of general education courses in which all native students must register in order to satisfy the requirement. The other college has given students a wide choice of fairly traditional, first-level courses which will satisfy general education requirements.

At San Jose State College new transfer students at the sophomore and junior levels and comparable groups of native students were administered a battery of tests which included the American Council on Education Psychological

Examination, the Cooperative English Test (Effectiveness of Expression), the Sequential Tests of Educational Progress Mathematics examination, and the Essential High School Content Battery tests in Social Studies and Science, in the fall of 1958 soon after registration, (Woodward and Hicks, 1959). Test score means were analyzed by class level and sex for native and transfer groups separately, to test the significance of differences. The test battery had been used by the College for a considerable number of years for purposes of advising, evaluating, and deciding about the admission of doubtful applicants. The findings, which cannot of course be generalized to other institutions, may be summarized very briefly as follows:

1) Native students scored significantly higher than transfer students in 79 per cent of the analyses of differences in mean scores which were performed.

2) Performance of transfer students approached that of the native group on the numerical area of the aptitude test, particularly the scores of the male, junior level transfer group.

3) On the mathematics achievement test differences between the various subgroups of native and transfer students were not significant at the junior level for men or women. On the English test, the native group achieved a higher level of performance in reading speed and, cumulatively, in the total score for speed, vocabulary, and comprehension.

Other studies performed at the College showed a general decrement in scores on quantitative measures for students tested from the freshman to the junior levels, except for students with majors requiring mathematics skills. Since transfer students choose engineering as a major more frequently than native students at the junior level (the latter having been often eliminated during the first two years of college), it is not surprising to find that differences between the native and transfer groups on quantitative measures were small.

A similar study was conducted at Sacramento State College with the objective of making a partial evaluation of the achievement of general education goals by transfer students in comparison to native students (Klingelhofer, 1958). All fifth-semester native students who had enrolled as freshmen in September 1956 and all junior transfer students enrolled for the first time in the fall 1958 were tested in September 1958 with a battery consisting of the School and College Ability Test and the Sequential Tests of Educational Progress in Reading, Writing, Mathematics, Science, and Social Studies. Mean stanine scores for the native and transfer groups were computed and the significance of differences between the two groups were tested. The results, which differ quite markedly from those of the San Jose study, are the following:

1) Differences in ability as measured by SCAT tend to favor the native student group but were found not to be significant.

2) Differences in achievement on the STEP tests of Reading, Mathematics, Science, and Social Studies tend to favor the transfer group but no differences approached significance. The native group scored higher than the transfer group on the Writing test but again the difference was not significant.

3) Only 22 per cent of the freshmen entering the college in 1958 were still enrolled four semesters later. Thus only a small group of native students were available for testing as juniors.

Other variables included in various descriptive studies of junior college transfer students are numbers of units attempted before transfer, accepted by the admitting institution, and fulfilling general education or other requirements at the admitting institution; number of colleges attended before transfer; lapse of time between attendance at the previous college and transfer; categorization of units lost in transfer; comparative performance at graduation; and grade-point differentials in total units attempted, units accepted, general education units, and senior college courses after transfer. These and other data all appear to be useful in various ways in assisting faculty and administrators to evaluate the educational program of the college as it involves transfer students. The studies which have been cited were selected because they were conducted as part of a coordinated series of studies, system-wide, of the performance of transfer students leading to changes in admission standards, policies in the evaluation of transfer credit, standards for probation and dismissal, and baccalaureate degree requirements. Not all colleges performed all types of studies. When similar studies produced quite different results for two or more colleges, the analysis was replicated in other colleges until generalizations emerged or the conclusion was reached that system-wide generalizations did not apply. A joint committee of state college and junior college personnel was given responsibility for the general design of the studies, for reviewing the results, and for formulating generalizations leading to recommendations in various policy areas involving transfer students.[5]

Many of the institutions participating in the Center study of transfer students have conducted local studies of various segments of the transfer group, usually in particular instructional units on the campus. They will not be cited since the findings are not generalizable and they appear to add relatively little to the models already described.

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[5] New policies were usually applicable to all transfer students, regardless of the type of institution last attended. Studies were performed primarily with junior college transfer students, since they constituted the major segment of the population under scrutiny.

Current Study of Transfer Students

In February, 1961, the Center for the Study of Higher Education undertook a longitudinal study of students transferring from two-year to four-year colleges, at the request of a joint committee of the American Association of Collegiate Registrars and Admissions Officers, the American Association of Junior Colleges, and the Association of American Colleges. The major objectives of the study are the following:

1) To gain information about the characteristics of transfer students--their socio-economic backgrounds, academic aptitude and achievement, extracurricular interests, educational and occupational planning, goals, values, etc.

2) To attempt to account for the variance in the performance of students after transfer in terms of personal characteristics, prior achievement in high school and junior college, academic aptitude, choice of program, etc.

3) To attempt to account for the remaining variance in transfer student performance in terms of the particular junior college attended before transfer, policies and practices in the senior institution to which the student transferred, and characteristics of the senior institution, *e.g.*, quality of the freshman class, retention rates, size of the transfer group.

4) To find out what kind of assistance is given to new transfer students in becoming oriented to the campus and what kind of cooperative planning is done by junior and senior colleges in the articulation of programs, coordination of resources and facilities, and the general easing of the transition from one campus to another.

5) To find out in what ways students who withdraw or who are dismissed from the institution to which they transfer differ from those who re-enroll until graduation (or the termination of the study) and to gain insight into the circumstances leading to withdrawal or dismissal and activities of the transfer students after withdrawing.

6) To find out in what ways "successful" groups of native and transfer students graduating in the spring of 1962 are similar and different in terms of personal characteristics, chosen field of study and career, academic ability, grades, time spent in college, etc., and to assess the extent to which the junior college is providing a route to the baccalaureate degree for students who do not have an opportunity to attend a four-year

college as freshmen because of factors of finance, high school record, family responsibilities, employment, etc.

Forty senior colleges and universities in ten states are participating in the study. States were selected on the basis of potential transfer enrollments from junior colleges in the fall, 1960, geography, and organization of higher education. A sample of four-year institutions in each state was asked to participate, including the major state university, the land-grant institution, one or more specialized institutions (e.g., former teachers colleges, engineering and agriculture schools), and, where possible, a private university. All transfer students from junior colleges were included in the study who met certain criteria. These varied with the institution in such a way as to insure that a significant portion of the transfer group was included at each college. The intent was to study transfers with full junior standing, on the assumption that they would have a reasonable chance of completing their degree programs during the two-year follow-up period of the study. At a number of institutions the group thus identified was so small that it was necessary to revise the criteria to include all students admitted for the fall, 1960, term who had completed a significant amount of work in a junior college prior to transferring. Samples of native and transfer students were also selected for study from the spring, 1962, graduating groups.

A lengthy biographical inventory was administered to the transfer students in the spring, approximately one and one-half semesters after transfer. The major areas of items are the following: personal-social factors, educational and vocational planning, extracurricular activity, evaluation of junior college experiences, and problems encountered in transferring. A brief form of the inventory was administered to native students and to junior college transfers prior to fall, 1960, in the graduating samples. A sample of the fall, 1960, group was interviewed on each campus during the fourth semester after transfer, to obtain additional information about their junior college experiences, problems of adjustment at the four-year college, evaluation of the net effect of transferring on achievement of college goals, and suggestions for improving articulation and coordination. Complete transcript data are being secured for each student in the study, together with aptitude test data from institutions where reliable testing programs were in effect for natives and transfers alike. Target date for completing the study is June 30, 1963.

A few observations on findings produced in the course of the first year of data collection may be of interest.

1) A grade-point average of C at the junior college was found most often to be the standard for clear admission to a four-year institution. The high school record, test scores, and amount of junior college work completed before transfer application are seldom taken into consideration in admitting transfer students. Policies governing the evaluation of transfer credit (amount,

kind, evaluator(s), limitations, etc.) vary more widely than policies governing the admission of transfer students. Policies governing their retention vary most widely of all the policy areas and tend to vary considerably between units on particular campuses.

2) Approximately one third of the 8,000 transfer students enrolled for the first time in the fall, 1960, were not registered at the same senior college in the fall, 1961. More than one third of the students who did not re-enroll had been dismissed for poor scholarship.

3) The 40 senior colleges and universities in the study vary widely in the extent to which they retained their transfer students beyond the first year of enrollment. Colleges with the best retention records re-enrolled as high as 90 per cent of their transfer students for the second year; the institutions with the poorest retention rates, only 50 per cent. Rate of dismissal does not appear to be highly related to rate of attrition, except as the latter sets an upper limit. Major state universities were among the institutions with both the best and poorest records of retention. Differences between institutions in particular states are striking. For individual institutions the percentage of dismissals in the attrition group ranges from 0 to 70, on the basis of the first year's work.

4) The percentage of junior level transfers for the fall, 1960, term who were able to complete the baccalaureate degree requirements by June, 1962, varies considerably from institution to institution and, of course, with the student choice of major. While one criterion for inclusion in the study was status as a full-time student in the first semester after transfer, it appears that at a number of the major universities one third or more of the students who were enrolled for two consecutive semesters failed to earn as many as 30 credits toward graduation during their first year after transfer, although few programs can be completed at the rate of 30 units per year.

5) Student reactions to their junior college experiences, both on the written inventory and in the interview situation, were generally favorable. Quality of instruction was rated high, in terms of both subject matter and methodology. On the other hand, students tended to give a low rating to counseling in the junior college (or to indicate that they received none). A large percentage of the students (good and poor alike) said that they would probably choose attendance at a junior college as freshmen, if they were to live their college lives over again.

6) Cost factors are the chief reasons students gave for choosing

a junior college--low tuition and charges (or none at all), residence at home with the family, and opportunity to be gainfully employed while attending college. The second major reason students gave for choosing a junior college over a four-year institution is that they were unsure of themselves at the time they graduated from high school--unsure of their ability to do college work (or of the adequacy of their high school preparation), unsure whether or not they really wanted a college education, and undecided about a major field of study or a vocation.

7) The development of effective machinery for the articulation of junior and senior college programs appears to be very slow in most of the states in the study, with California the notable exception. Where such machinery exists, it usually involves only one senior college or university and its "satellite" junior colleges, rather than all post-high school institutions in the state. Seldom are the high schools invited to participate in the proceedings, although problems considered are often of concern to high school personnel. New "super boards" of higher education, councils, or other formal schemes for coordinating higher education on a state-wide basis are being instituted or developed in several states without involving the junior colleges. California is again the exception, in that the junior colleges are full participants in the Coordinating Council for Higher Education, together with the University of California, the state colleges, and the independent colleges and universities.

A formal research report will be available at the time of termination of the study in June, 1963. It is expected that detailed reporting of the findings will also be made to the participating institutions and states during the coming year. Reports of findings and results will also be made at the spring meetings of one or more of the sponsoring associations.

Needed Research on the Transfer Student

As necessary background for research on transfer student problems a far more comprehensive accounting of their patterns of mobility and progress should be made on an annual basis than is now available. If institutions are to be compared on a meaningful basis, definitions must be agreed upon for a number of terms which are now unclear or meaningless for prediction purposes. For example, a bona fide freshman transfer must be distinguished from a new student who has had no significant prior experience as a full-time college student. "Last institution attended" needs clearer definition in terms of matriculation status, amount of work taken, and/or status as a full-time or part-time student. Classification by class level should also be standardized for reporting purposes, in terms of credits earned, credits transferred, or credits to be earned. There is an unsubstantiated impression that student mobility is increasing. Enrollment predictions for five, ten, or twenty years hence may be very much in error if more information is not gathered about the patterns of mobility and progress of transfer students through the undergraduate degree program.

Routine computations of grade-point averages before and after transfer are scarcely sufficient as a basis for making policy affecting transfer students and for planning programs to help them adjust to a new campus. Attrition appears to be high for transfer students, in comparison with native students at the same class levels, and varies considerably among institutions. Studies are needed in which attrition is related to prior academic achievement in high school and college, native ability, choice of program, adjustment to the new campus, socio-economic factors, grading standards, etc. Such studies should be made by type of college from which the students transfer and, when the number of students is sufficiently large, by specific colleges. Experiential data may be accumulated over a period of years for students transferring into specific majors from particular colleges. Circumstances leading to voluntary attrition after transfer appears to be as important an area of research as academic attrition, in helping to find ways to get the transfer student into the right institution in which to complete his degree program.

In studying attrition an attempt should be made to relate institutional policies for academic probation and dismissal to admission policies for transfer students, to find out whether certain groups of transfer students are admitted who have little probability of success under existing scholarship policies. For example, certain students (often a large majority of new transfer students) have a high probability of suffering a drop in grade-point average for the first term after transfer. Students with no more than a grade-point average of C (2.00) from the previous college may thus be subject to probation and perhaps dismissal after the second term if they are unable to raise their average both quickly and substantially after the first-term drop. While the problem of relating admissions and retention standards is basically a philosophical one for the local institution, experiential data should be collected which bear on the problem. Similarly, an evaluation might profitably be made of the orientation program, counseling and/or advising services, first registration procedures, housing services, financial aids, and other programs in which new transfer students may be involved and which may be related to their adjustment (or lack of it) to the campus.

Studies are critically needed in the area of rate of progress of transfer students toward the baccalaureate degree. If all students seeking higher education are to be accommodated and if the junior college is to be used more widely for offering the first two years of four-year college programs, it is important that experiential data be collected on the length of time students need to complete two-plus-two year programs, lapses in enrollment necessitating refresher courses, loss of credit in transfer for various reasons, changes in major, etc. More information about the rate of progress of native students is also needed as a baseline for evaluating transfer student data on patterns of enrollment and progress through the curriculum. Policies relating to evaluation of credit and satisfaction of degree requirements should also be examined in light of experiential data for transfer students.

Finally, we need to find out why students transfer at particular times in their programs, whether they intend to remain at the institution to which they transfer until they receive their degree, whether the transfer was the result of educational necessity (as from a junior college) or personal whim (or necessity), and whether the student and the institution to which he transferred both had all pertinent information available to them at the time the move was made, in order to facilitate progress through the degree program at a rate commensurate with the maintenance of appropriate standards by the institution which will grant the degree.

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EVALUATING PREVIOUS ACADEMIC PERFORMANCE

Warren W. Willingham
Georgia Institute of Technology

The investigations in which Dr. Knoell is involved will certainly be most valuable in understanding problems of the junior college transfer student. Hopefully, they will also have a pump-priming effect on local institutional research on transfer students in general. We have developed at least a superficial technology with respect to predicting college grades of regular freshmen. Predicting the success of transfer students is a different matter. In walking through the college prediction literature, one is quite unlikely to stumble over studies devoted to transfer students.

I suspect there is an inconsistency in our thinking about transfer students. On the one hand we regard them as a heterogeneous lot which defy generalization. They come from many colleges, enter at odd times, have weird classifications, and require course schedules which perplex the advisors at registration. How can such students be meaningfully grouped for research purposes? On the other hand, we fit transfer students into a common mold in one respect. We frequently assume that prediction research is unnecessary, after all, because these people have already been to college. Their previous record should provide a good estimate of subsequent success, particularly if we put in a juggle factor depending upon what school the student previously attended. These factors, plus a shortage of research personnel at the local level, have undoubtedly inhibited research which would be of value in judging the previous record of a transfer student.

We have recently completed a study of students transferring to Georgia Tech. I would like to describe some of the results of this study and draw a few conclusions which seem to be of general interest. In this connection, I shall dwell for a while on some aspects of a problem which has aroused a good deal of interest recently -- that is, the possibility of improving admissions evaluation by adjusting the grade scales of other institutions.

Description of the Transfer Group

It is difficult to get a clear picture of the transfer student because he falls into many diverse categories. He becomes lost in the shuffle, so to speak. There is some interest, then, in the rather simple minded question of who he is and how he performs after matriculation. Our original sample consisted of 754 students who matriculated during a three-year period, 1957-1960. These students came to us from 221 colleges located in 36 states. As one would expect the vast majority of these students came from other Southeastern states (83 per cent). For five students, on the average, two came from a junior college, two from a large four-year school, and two from a small four-year school. The typical student was in residence for either three or six quarters at the previous college and transferred to Georgia Tech without any lapse of time. Roughly three out of five came in as freshmen and practically all of the remainder matriculated as sophomores. Very few students were admitted as juniors. There are a number of reasons for this. Probably the main one is that our curricula are heavily loaded with specialized courses which the student is unlikely to have taken.

The previous college grades for all transfers averaged about B minus. Their grades in verbal and quantitative courses were approximately the same. After transferring, their grades at Georgia Tech dropped about three fourths of a letter grade. The difference was larger in the case of quantitative courses than in verbal courses.

Persistence at Georgia Institute of Technology

It is somewhat difficult to evaluate the persistence of the transfer students since they do not correspond exactly to any group of native students. The general trend of the data is fairly clear, however. If we compare the transfer students with regular freshmen, about 50 per cent more transfer students withdraw during the first year. If we compare the transfer students with second year native students the differences are larger; about twice as many transfer students withdrew during the year (38 per cent vs. 19 per cent). The question naturally arises as to whether the larger number of transfer student withdrawals is due to poor grades or non-academic factors peculiar to the transfer students. One way to approach this question is to compare the average grades of withdrawing transfer students and withdrawing native freshmen. We did this separately for students who remained in school for one, two, or three quarters. In each instance the transfer withdrawals and the native withdrawals had virtually identical averages. Given the same grades, the transfer student was evidently no more likely to withdraw than the regular freshman. The fact that more transfer students did withdraw is a reflection of the fact that they had poorer grades.

There are several possible hypotheses regarding this generally low performance and poor persistence. First, I should point out that we will never know whether the performance level is causally related in any way to the fact that the students attended another college first. Even if we had had appropriate control variables such as high school average and test scores, a covariance analysis comparing transfer students and native students would have been completely obscured by unknown selective factors. Another hypothesis is the possibility that these students are pushed into advanced courses for which they are inadequately prepared. I don't think this is likely the case, since each transfer student's record is gone over very carefully. If there is any doubt about a student's preparation, he is required to repeat the appropriate courses. I think it is more likely that we were accepting a goodly number of transfer students who were poor risks. This can partly result from lack of systematic knowledge about how these students are doing. And this relates back to the previous point about transfer students becoming lost in the shuffle. It can also result from utilizing inaccurate predictors. This leads naturally to the next phase of the study -- how to evaluate the previous college record so as to maximize prediction efficiency.

Prediction of Grades

There was no single test score available for even a majority of our sample, so we had to rely upon the previous college transcript. A natural bet for the best predictor would be the previous general average. Each student's average was computed on the same basis. As a hedge, we recorded everything else that seemed at all promising. For example:

a) Number of credits at previous college
b) Proportion of credits from quantitative courses
c) Number of credits transferred
d) Proportion of credits transferred
e) Previous verbal average
f) Previous quantitative average
g) Number of resident quarters at previous colleges
h) Classification upon entering Georgia Tech
i) Curriculum entered
j) Quarter entered
k) Lapse between previous college and matriculation at Georgia Tech

All of these data were fed into an IBM 650 along with several criteria. The most noteworthy finding was a correlation of .33 between previous college grade and first year average at Georgia Tech. This correlation is considerably lower than that normally found between high school average and freshman average. It is evident that the student's past performance, taken at face value, provides a poor basis for predicting grades at this institution. There are three fairly obvious methods of analysis whereby this prediction might be improved:

1) Use a combination of the measures listed above;
2) Include test scores with the previous average;
3) Adjust individual grades for differences which exist in the grading standards from college to college.

As is usually the case when you have an N of 750, we found a number of significant and useless relationships. Multiple regression analysis and covariance analysis did not reveal any information from the previous transcript which would add significantly to the previous average for prediction purposes. For this sample no pre-admission test scores were available, so this leaves us with the third possibility, that of adjusting previous averages.

Adjusting Grades

Several writers have recently discussed the problem of deriving adjustment factors for variations in high school and college grades. Tucker (1960) has presented the most extensive analytic treatment while Bloom and Peters (1961) have reported an extensive empirical study. Both of these works were concerned with corrections involving many colleges as well as many high schools. The problem in this report involves only the correction of one scale, the previous college grade, and is similar to the situation described by Ward (1959).

The first question is "What types of adjustments are mathematically possible and administratively feasible at the local level?" There appear to be three basic types. The first involves a multiple regression equation with unique weights and constants for each subgroup. A second method might be based upon the assumption that the raw score weights for the various predictors are proportional but vary in absolute level from one subgroup to another. The third approach would utilize the same weights but different constants for various subgroups. The first method would likely result in enough clerical errors to offset any advantage unless the computations were programmed. But even in a large university the mechanics of processing applications does not typically lend itself to computer use. The second method is feasible but depends upon demonstrating that subgroups are not equally predictable, and even then, the method is clerically cumbersome. The third method is by far the simplest and only involves adding or subtracting a constant from the student's previous grade. This was the approach used in this study.

Another general question is how to form the subgroups. Ideally each college represented should form a group, but this is clearly impossible with 221 colleges represented. The groups must be large enough to afford stable constants. In this study a rather long-winded procedure was used which is probably more trouble than it is worth. In general, colleges were grouped according to size, location, and type. Analysis of covariance was used to pull apart groups which did not perform the same and to put together logically similar groups which did. Seventeen groups resulted and it was soon obvious that there was an outlander among them. For sixteen groups the correlation between previous grade and Georgia Tech grade hovered about .50. The last group had been under suspicion from the start and it showed a correlation of .02. This group was given up as hopeless and discarded from further analysis. The remaining groups had homogeneous slopes but the differences among the intercepts were highly significant. The next question is how to adjust the group means for previous grade so as to capitalize upon the fact that the correlation within groups is higher than the correlation for the total group.

Three types of adjustments were tried out experimentally. I won't go into their derivation but each is shown schematically in Figure 1 along with its algebraic form. Adjustment I has the effect of moving the subgroup predictor mean to the within groups xy regression line. Adjustment II simply substitutes the criterion mean for the predictor mean. Adjustment III moves the predictor mean to the within groups yx regression line. These adjustments have several interesting characteristics. For example, it can be shown that Adjustment III will yield as high or a higher correlation between x and y than will either Adjustment I or II. In fact, it can be shown that Adjustment III will yield the highest possible correlation r_{xy} in the original sample. From the algebraic expressions it is also clear that Adjustment III is equivalent to Adjustment II in the special case when the x variable is expressed as a predicted criterion score. Table 1 shows the actual magnitude of the adjustments. The figures at the bottom of Table 1 show the over-all correlations between previous grade and Georgia Tech grade after the adjustments were applied.

A more important question is the extent to which the adjustment procedure holds up when tried out on a new sample. The correlations shown in Table 1 indicate that the three types of adjustments cross validated in reverse order. This was expected due to the fact that Adjustment III treats all variance among predictor means as true variance, while Adjustment I allows for regression in the differences between predictor means and criterion means within groups. Table 2 gives a running account of the effects of various prediction refinements in the cross validation sample. Applying Adjustment I raised the correlation from .44 to .51 -- not a dramatic rise but probably worthwhile. We had College Board Achievement Tests for 141 students in this second sample. As Table 2 indicates, adding in the science and mathematics tests again raised the correlation to .60. A revealing fact is that test scores raise the prediction efficiency to .58 even with unadjusted previous grades. It appears that the test scores do what they are designed to do. That is, they adjust for differences between colleges. Adjustments may prove worthwhile in evaluating a transcript for other purposes, but it doesn't seem likely that they will be of great predictive benefit when tests are available.

Table 1

THREE TYPES OF ADJUSTMENT FACTORS AND THEIR EFFECT UPON THE CORRELATION BETWEEN PREVIOUS GRADE AND GEORGIA TECH GRADE

Group	Adjustment I	Adjustment II	Adjustment III
1	-1.1	-1.1	-1.1
2	-1.2	-1.0	-0.9
3	-0.9	-1.0	-1.1
4	-1.0	-1.0	-1.1
5	-1.3	-1.5	-1.6
6	-1.1	-1.2	-1.2
7	-1.1	-1.4	-1.6
8	-1.1	-1.4	-1.6
9	-1.2	-1.2	-1.1
10	-0.6	-0.5	-0.4
11	-0.9	-1.1	-1.2
12	-0.9	-0.7	-0.5
13	-0.5	-0.3	-0.1
14	0.0	0.3	0.5
15	-0.6	-0.4	-0.3
16	-0.8	-0.7	-0.7
r_{xy} (1st sample)	.53	.58	.59
r_{xy} (2nd sample)	.51	.49	.48

Table 2

INCREMENTS IN PREDICTION EFFICIENCY IN THE CROSS VALIDATION SAMPLE WHICH RESULT FROM SUCCESSIVE REFINEMENTS

Refinement	N	r
Total Sample	189	.39
Selected 16 Groups	173	.44
Previous Average Adjusted	173	.51
Test Scores plus Original Average	141	.58
Test Scores plus Adjusted Average	141	.60

Figure 1

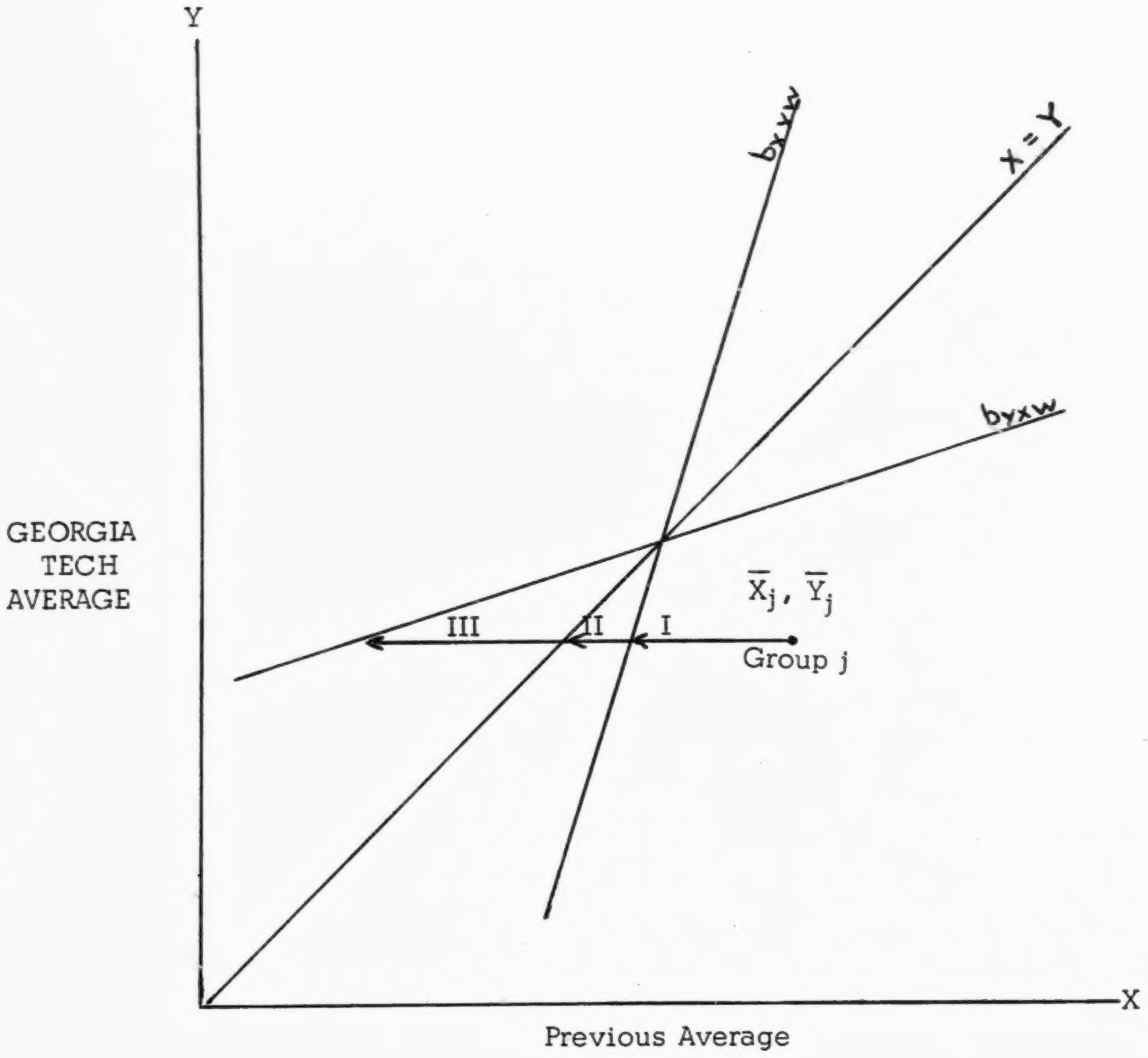
Y
bxyw
X = Y
byxw
GEORGIA TECH AVERAGE
$\bar{X}_j$, $\bar{Y}_j$
III
II
I
Group j
X
Previous Average

Figure 1- Schematic Diagram of Hypothetical Adjustments of $\bar{X}_j$.

Adjustment I = $\bar{Y} - \bar{X}_j + \bar{y}_j\ b_{xyw}$

Adjustment II = $\bar{Y}_j - \bar{X}_j$

Adjustment III = $\bar{Y} - \bar{X}_j + \bar{y}_j / b_{yxw}$

One other possible use for grade adjustments is worth mentioning. I do believe that adjustments can be helpful in evaluating transfer credits. We have found that appropriate adjustments for verbal and quantitative courses vary by more than two letter grades from group to group. I wonder whether it makes sense to apply the same transfer requirements to different students and different courses when the variation in grading standards is that large. It seems that adjustments could be helpful in determining which courses a student should repeat.

In summary, we have found that:

1) The previous college average is a miserable predictor of the subsequent performance of transfer students at Georgia Tech.

2) Additional juggling of the prior transcript did not turn up any useful information for prediction purposes.

3) It is possible to derive fairly stable adjustments which will improve the correlation between previous grade and average after transfer.

4) Test scores will further increase the accuracy of prediction.

5) When test scores are available, it does not appear that adjustments will add much to prediction.

6) Adjustments for previous grades may prove helpful in evaluating transfer credits.

7) Finally, other colleges would undoubtedly profit from taking a systematic look at this group of students who can easily become lost after matriculation.

I would like to add a brief postscript on a related problem which may have crossed your mind while listening to these remarks about adjusting the grades of transfer students. I refer to the possibility of adjusting the high school grades of matriculating freshmen. We have just completed a similar study based upon 3000 students divided into 100 subgroups.[1] In our situation, at least, the grade scales of different high schools were not comparable, and it was possible to derive stable adjustments which would raise the correlation between high school average and freshman average. On the other hand, when a multiple correlation was computed using high school average and Scholastic Aptitude Test, it made no difference whether the high school average was adjusted or unadjusted. Adjustments for high school average may be of some value if academic potential is estimated on the basis of this measure alone, but it does not appear likely that such adjustments will materially improve selection in a college which uses admission tests and high school average, properly weighted.

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[1] Findings are reported in a paper presented at the February, 1963, meeting of the National Council on Measurement in Education. Copies of the paper are available from the author (Willingham, 1963).

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PART V

COLLEGE ENVIRONMENTS AND STUDENT SELECTION

Presented by

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NON-INTELLECTIVE FACTORS AFFECTING STUDENT PERFORMANCE

Frederick B. Rowe
Randolph-Macon Woman's College

In the title of this paper, we have a paradigm for a scientific experiment. That is we have the independent variable -- non-intellective factors -- and the dependent variable -- student performance. Our experimental task is presumably to attempt to analyze, describe, and state succinctly some of the relationships which exist between these variables, in the hope that we can come to some better understanding of how non-intellective factors affect what most of us hope, however erroneously, is an essentially intellective function, that is, student performance.

Before I begin this task, it might be well to briefly review some of the non-intellective factors that are commonly assumed to affect student performance and to suggest some of the measures of student performance that can be used.

A) Non-intellective factors

1) Social and economic status of the student's family
2) Educational and/or cultural level of this student's home
3) The educational aspirations and expectations of the student's peers
4) The student's own educational and vocational aspirations
5) The student's attitudes toward the environment of the educational institution
6) The student's own personal and social needs

B) Measures of student performance

1) The course grades or grade point average obtained
2) The growth or development of the student relative to his peers or his own potential
3) The completion or premature termination of his studies
4) The student's accomplishment subsequent to the completion of his studies

Obviously, these lists are by no means complete but are merely suggestive of the various factors and measures which may be used. Many of the items in these lists have been or will be considered by other speakers in this conference. My own consideration of non-intellective factors will be centered on the student's attitudes toward the college environment and his personal and social needs. As measures of performance I've mainly been concerned with "staying in," as against "dropping out" of college, and with grade averages obtained.

Until fairly recently there was very little available in the way of psychometric devices designed for the purpose of measuring college students' personality needs and attitudes towards the college environment. For the last five years, however, new tools have been made available in the Activities Index (AI) developed by George Stern, and the College Characteristics Index (CCI) which Stern and C. Robert Pace produced from their efforts at the Psychological Research Center at Syracuse University. (Pace and Stern, 1958)

Out of the theorizing of Henry Murray on psychogenic needs and environmental press has come the two companion questionnaires, AI and CCI. Each of these is a 300 item inventory answered on standard IBM sheets. The AI measures the needs of the student as given by his indication of likes and dislikes among the 300 activities listed. The CCI measures the student's attitudes toward or image of the college environment in terms of his true-false responses to the 300 statements of the characteristics of the college. Pace (1961) has stated that the "group awareness of students about their environment constitutes a press in the sense of exerting a directive influence on their behavior, or setting conditions with which they must deal."

Background of the Study

Since March of 1961 I have been engaged in a research project, sponsored by the Southern Regional Education Board, in which I have been studying three Virginia women's colleges -- Hollins, Randolph-Macon, and Sweet Briar. (Rowe, 1962)

My purpose in this study has been to make a descriptive analysis of the characteristics of both the students and the environments of these institutions with a view toward arriving at a better understanding of their similarities and differences, and especially toward some understanding of a common problem plaguing the woman's college particularly, that is, the heavy drop-out or transfer of students during the first two years.

As you know from first-hand experience, our admissions procedures are aided greatly by the information we have regarding a candidate's previous academic achievement, and his academic ability as measured by scholastic aptitude tests and others. In spite of years of research and practical experience on prediction of success of college students, we still "fail" with about 50 per cent of those admitted to our colleges, if failure is defined as termination of studies before completion of the degree program for which the student has enrolled.

Need for Knowledge of Institutional Characteristics

Presumably a contributing factor in these "failures" is the college's inability to provide the environment in which the particular patterns of needs of students are satisfactorily met. If this assumption is correct it might then be partially rectified if we could identify the important characteristic press of our various colleges, *i.e.*, if we could spell out for ourselves and others what are the salient demands and influences on the student, and further, what personal and social characteristics of students are found in those who thrive in the environment provided by the particular institution.

Each of us knows that there are real differences among the hundreds of colleges and universities which make up the complex of higher education in the United States. We also know that there is an almost infinite variety among the students who enter our colleges each year. With some students we succeed quite well; with others, our success is so great that we point with pride at their achievement, and feel that somehow a large portion of their successful performance is the result of our wise selection and the superior environment which we provided for their educational development. Our failures trouble us, but, since they usually leave in a year or two, we aren't as aware of them as we might be. Perhaps we tend to think of these failures as largely due to the inadequacies of the students themselves. Certainly such a tendency helps us maintain our self-esteem and our faith in the merits of our institution as the right sort of place for any "well qualified" student. I would suggest, however, that we need to become more concerned with the personality characteristics of our successful and our unsuccessful students and also with the characteristics of our institutions as they relate to students' personalities.

To make my point somewhat more concrete, let me illustrate. If the characteristic strong press of an institution's environment is for personal and social development, civic responsibility, and practical activities; and the strong needs of the individual student are for detached intellectualization, critical judgment and independence, and the acquisition of knowledge and theory for its own sake; the student may be a misfit in the institution and choose to depart from it as soon as possible.

In a symposium given at the American Psychological Association meeting in New York last September, Pace (1961) reported on the results of some of his studies with the *CCI*. He found that colleges do tend to fall into various categories according to their environmental differences. On the basis of factor analyses of some of his data he was able to identify and measure differences in the environments of small denominational non-accredited liberal arts colleges, as distinct from teachers colleges, and from high prestige liberal arts colleges. The factors identified were labeled:

1) Intellectual-Humanistic-Esthetic
2) Scientific-Independent
3) Status Oriented and Practical
4) Group Welfare

Pace found that the high prestige college environments showed characteristically high press in the Intellectual-Humanistic-Esthetic, and Scientific-Independent factors and low press in the Practical-Status Oriented, and Group Welfare factors. The teachers colleges, on the other hand, showed just the opposite pattern. The denominational non-accredited colleges showed highest press for the Group Welfare factor, lowest for the Scientific-Independent factor with the others falling into the middle range.

Let us assume that a student with high marks from a "good" high school, whose SAT scores are in the low 700's, applied to any of the schools Pace has described. Let us further assume that the student is a Christian, the son of a professional person, and has established himself as one who is respected and liked by peers and teachers thus having nothing but favorable to glowing recommendations to accompany his application credentials. What is your guess as to his acceptance at any of the schools which Pace has described? My guess is that all of these schools would gladly find a place for him in their freshman class. Notice, however, that we know little or nothing of the personal needs of the student, and from what I have seen of the application forms used by our colleges we will learn little about these needs. Notice also that these colleges differ greatly in the sort of environment which they provide. While their courses may have the same labels, their textbooks may be identical, and the core program of degree requirements may be very similar, nonetheless, the effective environment of these schools will differ greatly.

If we are to serve best those we admit I would again propose that we need to determine as well as we possibly can the characteristics of our institutional environment as they are related to the personal and social needs of our students. With the pressure for admission building during the present decade we may, if we are able to better define these factors, improve our selection and decrease our failures.

Selected Findings

While much of my data is still being processed I would like now to give you some of the results of my study of Hollins, Randolph-Macon and Sweet Briar. These schools are, on the surface, quite alike in that they're all women's colleges; all expensive; largely residential; have approximately the same size student bodies, circa 600-700; provide only a liberal arts program, except for Hollins' new and quite small master's program; and are all located within a 25-mile radius in west-central Virginia. We might further describe the students by noting that average SAT scores are in the middle or upper 500's, that combined parental education averages 6-7 years beyond high school, that fathers' occupations are predominantly executive or professional and that the students are overwhelmingly Protestants and largely Episcopalian. Hollins and Sweet Briar students are most apt to come from private schools. Randolph-Macon students are largely from public schools. Southerners are almost equally balanced by "Yankees" at Hollins and Sweet Briar, whereas at Randolph-Macon, Southerners make up about three fourths of the student body.

Using Pace's factors once again we can look at the CCI results for the respondents at the three colleges as they are shown in Table 1. Higher scores indicate a greater press for that factor. The possible range is 0-10. In a normative sample of 32 colleges, Pace (1961) found an actual range of approximately 2-8.

By inspection of Table 1 we can see that Hollins students indicate that the highest press (Mean = 5.84) in their environment is for Group Welfare. The welfare of the well-mannered and well-managed college community, social responsibility, and helping and being helped by others, would be prime characteristics of this college's environment. Following closely (Mean = 5.63) is the Intellectual-Humanistic-Esthetic press. This suggests an emphasis on new knowledge and the pursuit of ideas. Next comes a markedly lower press for the Status Oriented-Practical factor. The practical personal and vocational aspects of college, and status seeking aren't too important at Hollins. The least important press is the Scientific-Independent factor. Achievement in science, and independent self-sufficiency are not major characteristics of the school. The environment, on the contrary, involves a rather high degree of order and supervision rather than independence, and the students expect it to stay that way.

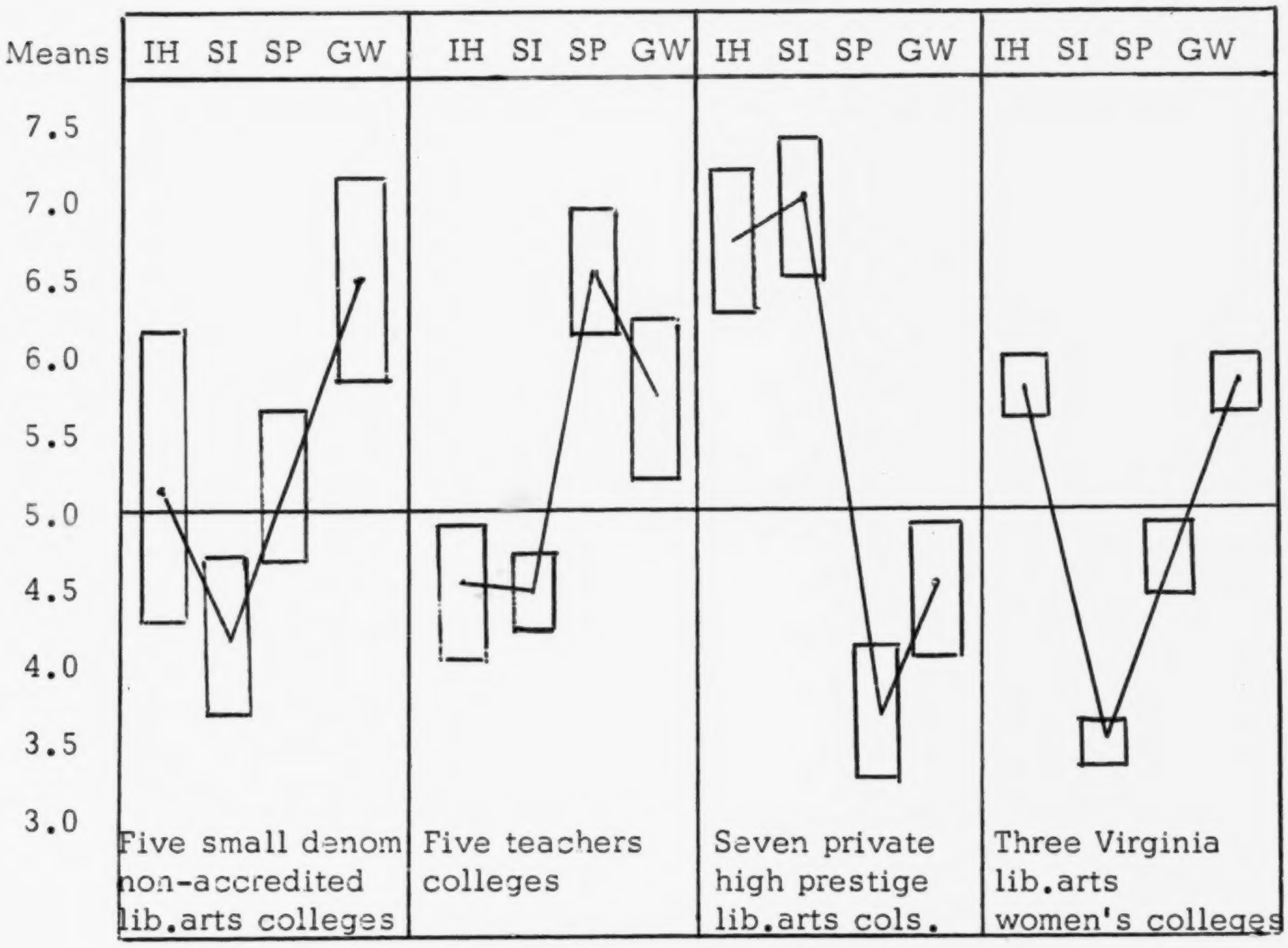
Looking at the faculty mean scores it can be seen that although the absolute values differ somewhat, the order or heirarchy of these characteristics remains the same, suggesting that the faculty and students are in substantial agreement about the environment. Note that only 40 faculty respondents were available so some question about the reliability of these means is in order since half the faculty did not complete the questionnaires.

At Randolph-Macon we see a somewhat different picture. Here the student mean for the Intellectual-Humanistic-Esthetic press is highest, with Group Welfare second. Markedly lower is the mean score for the Status Oriented-Practical factor with the Scientific-Independent factor again bringing up the rear. The Randolph-Macon faculty reverse the order of the first two press factors giving Group Welfare first place and the Intellectual factor second place. The remaining two factors agree with the student ordering.

Table 1
CCI STANDARD SCORE MEANS
COMPARISON OF FACTORS - 3 COLLEGES

	Students			Faculty		
	N=516	N=468	N=422	N=40	N=59	N=30
	Hol	R-M	SB	Hol	R-M	SB
Intellectual-Humanistic-Esthetic	5.63	5.98	5.64	4.74	5.84	6.00
Scientific-Independent	3.50	3.23	3.38	3.08	2.89	3.38
Status Oriented-Practical	4.82	4.41	4.76	4.49	4.40	4.51
Group Welfare	5.84	5.79	5.50	5.85	6.41	6.41

Figure 1
CCI PROFILES FOR VARIOUS TYPES OF COLLEGES



Bars enclose complete range of mean cluster scores for all colleges in each group.

IH = Intellectual-Humanistic-Esthetic
SI = Scientific-Independent
SP = Status Oriented-Practical
GW = Group Welfare

Sweet Briar student means show somewhat lower scores on the first two factors than do the R-M student responses but the order of the factors is the same in these two colleges. The Sweet Briar faculty, like the R-M faculty, reverse the order of the two major characteristics putting Group Welfare in first place and Intellectual-Humanistic-Esthetic in second place.

Having seen the differences in emphasis among the various groups in Table 1, we can state, in summary, that two factors predominate in all three colleges; that is, their environments may be characterized as having both Group Welfare and Intellectual-Humanistic-Esthetic press as major emphases with considerably less press for the Status Oriented-Practical factor and little emphasis on Scientific-Independent characteristics.

In order to better understand what we have seen in Table 1 we can refer to the diagram shown as Figure 1, taken in part from Pace's report at the American Psychological Association meeting in September 1961, which shows profiles of CCI mean standard score clusters on each of the four characteristics previously discussed. The profile of our three Virginia women's colleges can be compared with the profiles produced from student results at small denominational non-accredited colleges, teachers colleges, and high prestige liberal arts colleges. It may be noted that the most prestigious colleges show markedly high press in both the Intellectual-Humanistic-Esthetic cluster and in the Scientific-Independent cluster. The teachers colleges give just about the opposite picture with their high press appearing in the Status Oriented-Practical and Group Welfare clusters. The greatest resemblance to our Virginia women's colleges is found in the profile of the small denominational colleges with, however, considerably less emphasis in the Virginia colleges on both Scientific-Independent and Status Oriented-Practical characteristics, and on Group Welfare.

Having seen something of the similarities and differences among the colleges in our study and other colleges, let us now consider briefly the relationships among the hierarchy or order of press as seen in the correlations shown in Table 2.

Table 2

RANK ORDER CORRELATION OF STANDARD SCORE MEANS

	Sweet Briar					Hollins					Randolph-Macon			
	Jr	So	Fr	Fac		Jr	So	Fr	Fac		Jr	So	Fr	Fac
Sr	.96	.86	.96	.78	Sr	.93	.90	.85	.74	Sr	.93	.91	.84	.89
Jr		.89	.74	.76	Jr		.97	.84	.70	Jr		.89	.85	.87
Soph			.80	.76	Soph			.85	.71	Soph			.88	.81
Frosh				.73	Frosh				.50	Frosh				.76

Here we have the rank order coefficients of CCI mean standard scores for the faculty and each class. If you will look first at the Sweet Briar entries to the left of the table you'll see the relationship of the senior class's perception of the college environment with that of the junior class. The degree of agreement is expressed by the coefficient .96, and may be taken to mean that seniors and juniors are in substantial agreement as to the kind of environment Sweet Briar provides. You'll notice that the seniors and sophomores, and seniors and faculty coefficients show slightly less agreement, however, the general picture at Sweet Briar among the various groups is essentially one of a consistent, high level of agreement about the characteristics of the college.

The various Hollins College groups show generally the same level of agreement about the characteristics of their college as does Sweet Briar. An exception may be noted in the case of the freshman class and faculty where the coefficient is only .50.

At Randolph-Macon we have very consistent agreement as to the order of environmental press. As you have a chance to study the Randolph-Macon section of Table 2 you'll note that there's an almost perfect progression of greater agreement among classes from freshman to senior year. It will also be noted that faculty and students show the same progressively higher level of agreement about the environment. This may suggest that the indoctrination, assimilation, or conformity (you may choose your own terms depending on your viewpoint) has produced very closely-knit images of the Randolph-Macon environment among its constituent groups.

The last analysis of my results I want to present involves a comparison of the students who have withdrawn from the class of 1964, i.e., who have dropped out of the rising junior class, with those who will return for their junior year. I have only data on Randolph-Macon students at the present time.

First of all, it may be noted that the daughters of professional men are more apt to return than those of business men. Secondly, the region of the country from which a student comes seems to be related to her staying past the sophomore year. The odds are approximately 3 to 2 that a Virginia girl, and nearly that good that a North Carolina, Tennessee or Kentucky girl, will continue at Randolph-Macon. Girls from the Deep South and the Southwestern border states are poor bets, since the odds are about 3 to 1 that they will not last beyond the sophomore year. "Yankees" are about even money to stay at Randolph-Macon. There are so few from the Midwest and West that no reliable results are available.

On the CCI, the students who will return, as contrasted with those who will not return, describe the college as having significantly less press for Deference and Dominance and significantly more press for Harmavoidance. The returnees then are saying that the college environment provides less demand for submission to the opinions of others and exerts less assertive or manipulative control than is seen by those who are dropping out. The drop-outs see the college as providing more protection from potentially injurious or dangerous situations than do the returnees. To summarize these CCI differences it might be said that the drop-outs perceive the college as having a more domineering maternalistic atmosphere than do the returnees.

On the Activities Index (AI), which is the measure of the personality needs of the students we find that the returnees are more aggressive; less compulsive about order and detail; and less sexy, by which I mean less "in love with love" -- less "boy crazy."

Discussion and Conclusions

From results which have been obtained to date it is evident we can measure and describe the characteristics of both the students and environments of our colleges. These descriptions can be useful for self-study purposes since they provide what seems to be a reliable common ground on which evaluation can be made. When the reliability of the differences between those who complete and those who do not complete their program of studies has been established we may also have an aid to student selection techniques.

Research of this sort is relatively simple in that the questionnaires require no special skill for administration and the students' responses can be hand scored by student clerical assistants. The student records in admissions' and deans' offices are usually readily available. I would guess that in most colleges an admissions officer, a faculty member in psychology or sociology, and one part-time clerical assistant, could make a thorough description of their college by part-time work in one semester. This assumption is based on my experience in doing so in three colleges in 18 months.

The admissions officer who sees a need for and potential value in studies such as those reported here will likely find, among the social science faculty, the skills needed to direct or advise on such research. I hope you will become increasingly involved in research related to college admissions during the coming years.

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DIVERSITIES IN COLLEGE ENVIRONMENTS: IMPLICATIONS FOR STUDENT SELECTION AND TRAINING[1]

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Although the study on which I shall report was not designed primarily as a selection study, we did collect information about two criteria which should be of interest to admissions officers at higher educational institutions. The first criterion concerns the extent to which students drop out, or continue in normal progression toward their bachelor's degree. This is, of course, the familiar "retention" criterion. The second criterion concerns the extent to which students become interested, during the undergraduate years, in pursuing advanced graduate or professional degrees. The latter criterion is presumably related to the percentage of a college's graduates who later obtain the Ph.D. degree -- what Knapp and Goodrich (1952) have called the college's "productivity rate."

I assume that most admissions officers would like to select students so as to maximize the number who will continue in normal (or accelerated) progression toward the baccalaureate, and at the same time maximize the number who will become interested in seeking advanced graduate or professional training. To be sure, these two criteria are not the only, nor necessarily the primary, criteria in terms of which selection policies should be evaluated. I contend merely that these two characteristics of the college are worth considering in evaluating a student selection program.

It is obvious that neither of these criteria -- neither the college's retention rate nor its "productivity" -- is a simple function of selection policies. The student's training during the undergraduate years undoubtedly determines to some degree whether he will continue, and whether he will develop the motivation needed to obtain advanced professional or graduate

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degrees. Regardless of the thoroughness of a college's selection program, students exposed to mediocre teachers will lose their appetite for learning. Fortunately we had in the study I shall report some data on the characteristics of the faculty and of student peer groups at a large number of colleges. Thus it was possible to study college "press" characteristics associated with each of the criteria.

Many of you are already familiar with the college press scales developed by George Stern and published in his College Characteristics Index (1958). Items in a revised instrument, called the Inventory of College Characteristics, were used in my study. The items were similar in format and directions to those used by Stern (indeed some of the items were borrowed from him). Thus in describing his college environment the student was asked to indicate whether each of a series of statements was "True" or "False" with respect to his college. Unlike the Stern scales, the present ones were designed to discriminate between college environments having different effects upon the student's motivation for advanced training (Thistlethwaite, 1959a, b; 1960; 1962a). Knowledge of the characteristics of college environments which motivate students to seek advanced training has obvious value for the college administrator. Such knowledge may suggest ways of improving undergraduate instruction, of selecting college teachers, or of making other administrative changes which will create more favorable learning environments.

Two questions with which I shall be concerned, then, are: (1) What kinds of college and student characteristics are associated with retention in the college of initial enrollment? (2) What kinds of college and student characteristics are associated with increased motivation for advanced training? The answers should have implications for both the selection and training of students. Before taking up these questions, however, it is desirable to describe the sample of students studied and some of the differences between colleges on our student and faculty press scales.

Student Sample

The analysis is based upon a sample of examinees participating in the 1958 National Merit Scholarship Qualifying Test. This test, which is normally given in the second semester of the junior year of high school, contains both verbal and quantitative subtests, and correlates highly with college aptitude tests commonly used in college admissions. It is estimated that 85 per cent of all secondary school graduates in 1959 attended schools offering the test, and that approximately 27 per cent of these graduates were tested.

Figure 1 shows the principal steps in selecting the sample. These steps amounted to a sequential filtering of examinees. Group A in Figure 1 included all students taking the 1958 Merit test; Group B, only those expected

Figure 1

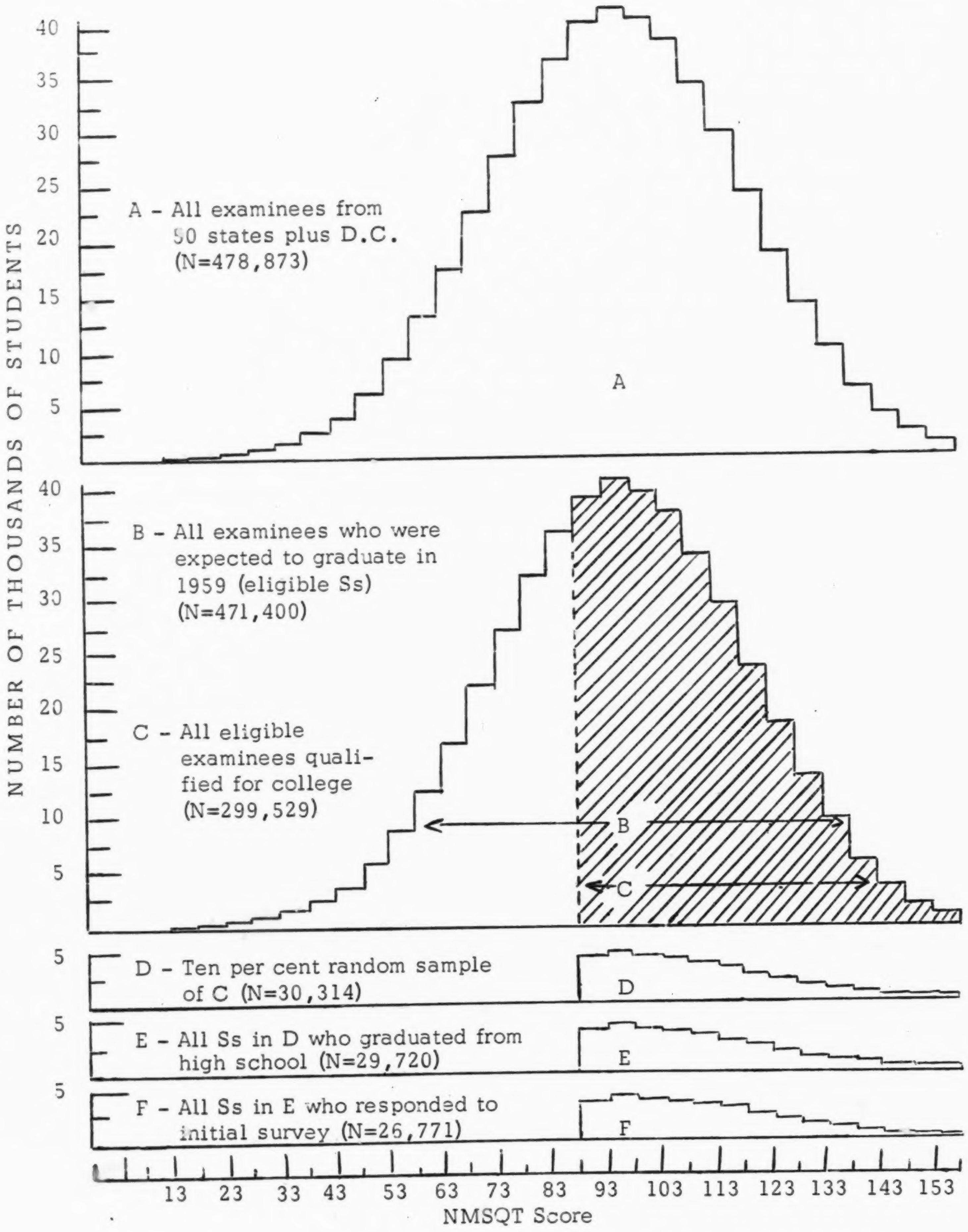

Figure 1- Successive Stages in Selection of Sample from Examinees in the 1958 Merit Program

Table 1

CLASSIFICATION OF 140 COLLEGES AND UNIVERSITIES BY STATES

Alabama

Auburn University
University of Alabama

Arizona

University of Arizona

Arkansas

University of Arkansas

California

San Diego State College
San Jose State College
Stanford University
University of California
(all campuses)
University of Southern California

Colorado

Colorado State University
University of Colorado

Connecticut

University of Connecticut
Yale University

Delaware

University of Delaware

District of Columbia

Georgetown University

Florida

Florida State University
University of Florida
University of Miami

Georgia

Emory University
Georgia Institute of Technology
University of Georgia

Hawaii

University of Hawaii

Illinois

Loyola University
Northern Illinois University
Northwestern University
Southern Illinois University
University of Chicago
University of Illinois

Indiana

Ball State Teachers College
De Pauw University
Indiana University
Purdue University
University of Notre Dame
Valparaiso University

Iowa

Iowa State University of Agriculture and Technology
Iowa State Teachers College
State University of Iowa

Table 1
(contd.)

Kansas

- Kansas State University of Agriculture and Applied Science
- University of Kansas

Kentucky

- University of Kentucky
- University of Louisville

Louisiana

- Louisiana State University and Agricultural and Mechanical College
- Loyola University
- Tulane University

Maine

- University of Maine

Maryland

- University of Maryland
- U. S. Naval Academy

Massachusetts

- Boston College
- Boston University
- Harvard University
- Massachusetts Institute of Technology
- Northeastern University
- Smith College
- Tufts University
- University of Massachusetts
- Wellesley College

Michigan

- Central Michigan University
- Michigan State University
- University of Detroit
- University of Michigan
- Wayne State University
- Western Michigan State

Minnesota

- Carleton College
- University of Minnesota

Mississippi

- Mississippi State University
- Mississippi State College for Women
- University of Mississippi

Missouri

- St. Louis University
- University of Missouri
- Washington University

Nebraska

- University of Nebraska

New Hampshire

- Dartmouth College

New Jersey

- Princeton University
- Rutgers University

New Mexico

- University of New Mexico

New York

- Brooklyn College
- City College
- Columbia University
- Cornell University
- Hunter College
- New York University
- Queens College
- Rensselaer Polytechnic Institute
- State University of New York (all campuses)
- Syracuse University

Table 1
(contd.)

New York (con't)

University of Buffalo
University of Rochester

North Carolina

Davidson College
Duke University
University of North Carolina (Chapel Hill)
University of North Carolina (Raleigh)
University of North Carolina (Greensboro)
Wake Forest College

Ohio

Bowling Green State University
Kent State University
Miami University
Oberlin College
Ohio State University
Ohio University
Ohio Wesleyan University
University of Cincinnati
University of Dayton

Oklahoma

Oklahoma State University
University of Oklahoma
University of Tulsa

Oregon

Oregon State College
University of Oregon

Pennsylvania

Carnegie Institute of Technology
Drexel Institute of Technology
Gettysburg College
Lehigh University
Pennsylvania State University
Temple University

Pennsylvania (con't)

University of Pennsylvania
University of Pittsburgh
Villanova University

Rhode Island

Brown University (including Pembroke)
University of Rhode Island

South Carolina

Clemson Agricultural College
University of South Carolina

Tennessee

Memphis State University
University of Tennessee
Vanderbilt University

Texas

Baylor University
North Texas State College
Rice Institute
Southern Methodist University
Texas Agricultural and Mechanical College
Texas Technological College
University of Texas

Utah

Brigham Young University
University of Utah

Virginia

College of William and Mary
Virginia Polytechnic Institute

Washington

Washington State University
University of Washington

Table 1
(contd.)

West Virginia

Marshall College
West Virginia University

Wisconsin

Marquette University
University of Wisconsin

to graduate from high school during the school year 1959-60; Group C, only eligible examinees having test scores of 88 or greater (this cut-off score was equivalent to a percentile rank of 64 relative to national norms); Group D, only the qualified and eligible examinees selected in a 10 per cent random sample; Group E, only those in the initial sample known to have graduated from high school; and Group F, only those in the designated sample responding to the initial mail survey, sent in fall, 1959, when most of these students would normally have enrolled in college.

Over 80 per cent of the respondents reported they had enrolled in college as full-time students. As might be expected these students were widely dispersed in colleges throughout the nation -- over 1400 colleges and universities were named by respondents as their institution of initial enrollment.

A second mail survey was sent to 11,000 of these students in June, 1961, when most of them would normally have completed two years of college. These students were enrolled in the 140 colleges which had the largest enrollments among examinees in the sample. The colleges are shown in Table 1. These institutions, located in 42 states and in the District of Columbia, enrolled approximately one third of all first time, degree credit students in fall, 1959. The data on student retention are based upon returns from about 8000 examinees, which roughly represent a 3 per cent sample of the first time enrollments at these institutions. College press data were obtained from about 4200 examinees, which represent only a 1.5 per cent sample of first time enrollments at these colleges.

To be sure, the student samples at any given college were small and cannot be considered representative of the entire student body. Nonetheless it is possible to consider each college subgroup as being exposed to at least a sample of the college's pressures and activities. We may then ask: What happens, during the first years of college, to students in each of these subgroups? Are there differences in the extent to which they remain in the college of initial enrollment, change their motivation for advanced training, or perceive their teachers and fellow students to exert strong press for certain kinds of behavior? Marked diversities in the fates of these students should provide some indication of the effects of different student selection and training policies.

Diversities in College Environments

Although only a relatively select group of colleges are represented here, since we included only those attended by large numbers of Merit examinees, there was still sufficient variation among institutions to provide an opportunity for relationships to appear.

Differences in Retention Rates

The range in college retention rates during the first two years of college varied from 98 to 50 per cent. The two institutions having the highest retention rates were Yale University and the University of Pennsylvania. These rates are shown in Table 2, where it can be seen that 13 per cent of the colleges retained more than 90 per cent of their students, while 18 per cent retained no more than 70 per cent of their students.

Changes in Motivation for Advanced Training

Students reported their degree aspirations both at the beginning of college and again in June, 1961, when most of these students had completed two years of undergraduate study. At one college the percentage planning to seek graduate or professional training increased from 9 to 52 per cent over the two-year interval. At another college the percentage planning to seek advanced training decreased from 38 to 21 per cent over the two-year interval. A scatter-plot of these percentages is shown in Figure 2, where each college is represented by a dot. A simple index of change in motivation for advanced training may be computed from the equation for the diagonal line shown in Figure 2, *i.e.*, by computing the difference between the observed Y percentage and that predicted on the basis of the X percentage. These differences, which are called residual errors of estimate, tell us whether the college's students had higher or lower aspirations after two years than we would expct on the basis of their plans at the start of college. In general, all those colleges represented by dots *above* the diagonal line in Figure 2 had students who *increased* their motivation for advanced training more than we would expect, while those colleges represented by dots *below* the diagonal line had students who *decreased* their motivation for advanced training more than we would expect.

Another way of illustrating how colleges differ with respect to changes occurring in the aspirations of their students is shown in Table 3. Here we have compared two groups of students: the first group shown in the upper part of the table consisted of students at the 14 colleges where *increases* in aspirations were most frequent; the second group shown in the lower part of the table consisted of students at the 14 colleges where *decreases* in aspirations were most frequent. At the first group of colleges the number raising their aspirations was about three times greater than the number lowering their aspirations (36 per cent *vs*. 12 per cent). At the second group of colleges the number lowering their aspirations was almost twice the number raising their aspirations (30 per cent *vs*. 16 per cent).

Although a small number of students make the decision to go to graduate or professional school during the freshman or sophomore year, many more make their decisions later. Gropper and Fitzpatrick (1959), who asked a large sample of undergraduate seniors when they made their decision, found that

Table 2

RETENTION RATES AMONG 8,028 MERIT EXAMINEES AT 140 COLLEGES DURING THE FIRST TWO YEARS OF UNDERGRADUATE STUDY

Per cent of examinees who had completed 2 years at institution of initial enrollment in June, 1961	Number of institutions	Per cent of institutions with given retention rate	Cumulative per cent
96 - 100	6	4	4
91 - 95	12	9	13
86 - 90	20	14	27
81 - 85	26	19	46
76 - 80	32	23	69
71 - 75	18	13	82
66 - 70	11	8	90
61 - 65	6	4	94
56 - 60	5	4	98
51 - 55	2	1	99
46 - 50	2	1	100
TOTAL	140	100	

Median percentage retained - 79.5%

Figure 2

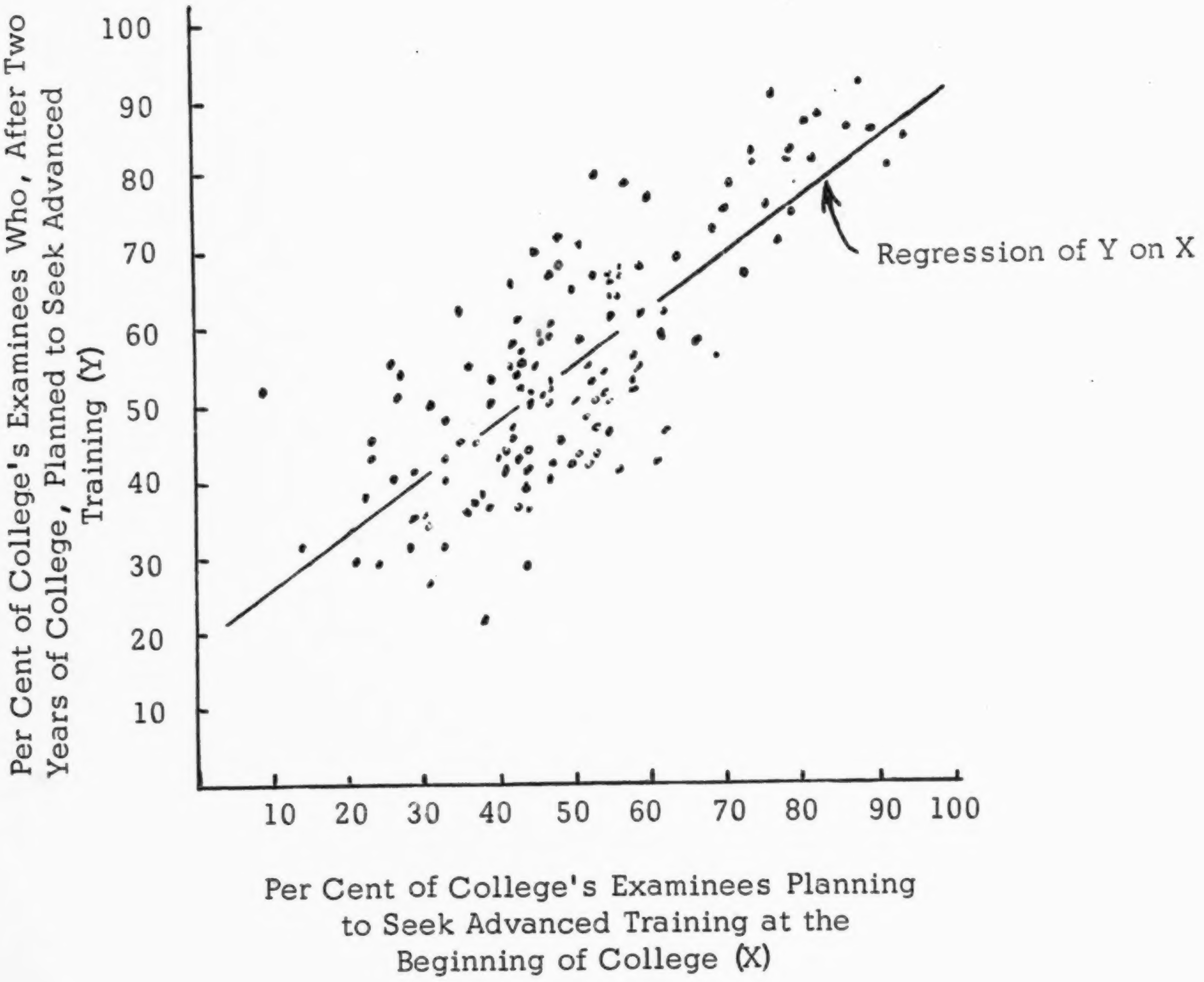

Figure 2- Changes in Aspirations of 4,346 Merit Examinees Enrolled at 140 Colleges

Table 3

CHANGES IN EDUCATIONAL ASPIRATIONS AMONG STUDENTS ENROLLED AT 28 COLLEGES

Highest level student planned to complete at beginning of college	Number and per cent of students		Per cent showing each kind of change in aspiration after 2 years of college			
	N	%	Decreased aspirations	No Change	Increased aspirations	Total
I. Fourteen colleges in which students showed greatest increases in aspirations						
1) Some college	13	3.4	----	7.7	92.3	100.0
2) Bachelor's degree	204	52.9	2.0	45.6	52.4	100.0
3) Master's degree	80	20.7	12.5	71.3	16.2	100.0
4) Professional degree (M.D., D.D.S., LL.B., etc.)	56	14.5	30.4	55.4	14.3	100.0
5) Ph.D. or equivalent	33	8.5	48.5	51.5	----	100.0
Total	386	100.0	12.2	51.5	36.3	100.0
II. Fourteen colleges in which students showed greatest decreases in aspirations						
1) Some college	9	2.1	----	22.2	77.8	100.0
2) Bachelor's degree	198	47.2	4.5	75.8	19.7	100.0
3) Master's degree	104	24.8	53.9	31.7	14.4	100.0
4) Professional degree (M.D., D.D.S., LL.B., etc.)	72	17.1	52.8	37.5	9.7	100.0
5) Ph.D. or equivalent	37	8.8	59.5	40.5	----	100.0
Total	420	100.0	29.8	54.0	16.2	100.0

48 per cent made their decisions during the third or fourth year of college; only 27 per cent made their decisions during the first years of college. In limiting the present study to the first two undergraduate years we are dealing with a population in which students have made only minimal changes in aspirations. Consequently the variance of "change" scores are probably much smaller than those we would find among a group of seniors. Thus we are dealing with a criterion in which the range of variation is attenuated; under these conditions it is of course likely that relationships between college press and changes in aspirations will be underestimated. In other words, correlations between press scale scores and changes in motivation for advanced training, which we shall consider shortly, would probably be somewhat greater among a population of students who had completed college.

Differences in Faculty and Student Press

The college press scales and the percentages of students at different schools answering selected items "True", shown in Table 4, tell us that both teachers and students differ markedly from college to college. In Table 4 we see a comparison of the responses of students at two groups of colleges, A and B, which showed great diversity with respect to some scales but relatively little on others. Consider a few of these items:

-- on scale 3 (Enthusiasm) 84 per cent of the A students, while only 42 per cent of the B students said "True" to the statement, "Faculty members put a lot of energy and enthusiasm into their teaching."

-- on scale 4 (Achievement) 81 per cent of the A students while only 28 per cent of the B students said "True" to the statement, "Teachers here expect, and usually get, excellence in the academic performance of students."

-- on scale 14 (Intellectualism) 63 per cent of the A students and 24 per cent of the B students said "True" to the statement, "Students spend a lot of time planning their intellectual careers."

Differences between colleges are also illustrated in Figure 3, which shows non-overlapping distributions of scale scores for selected colleges on the Vocationalism scale. The two scales shown at the top of Figure 3 are those which differentiated most clearly among the 140 colleges, while the two scales shown at the bottom of this figure (Directiveness and Supportiveness) are those which differentiated least clearly among the 140 colleges. However, it can be seen that the degree of overlap even on the least discriminating scales is relatively slight.

What do these differences in college environments mean? Is it good for a college faculty to exert strong press for Affiliation, Directiveness or

Figure 3

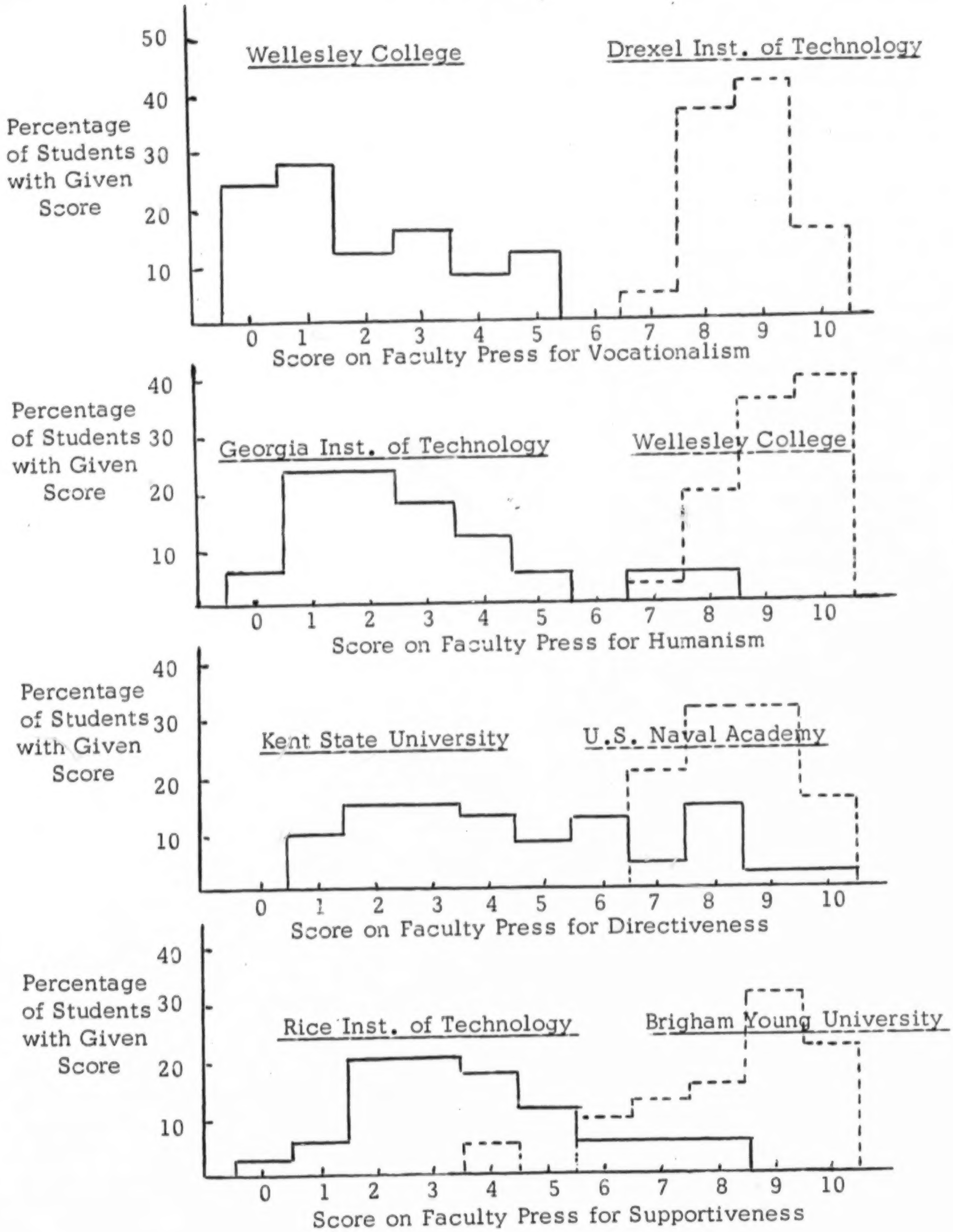

Figure 3- Distributions for Colleges with Lowest and Highest Average Scores on Scales for Assessing Faculty Press for Vocationalism, Humanism, Directiveness, and Supportiveness

Table 4

REPRESENTATIVE ITEMS ON SCALES OF THE INVENTORY OF COLLEGE CHARACTERISTICS AND RESPONSES OF STUDENTS AT TWO GROUPS OF COLLEGES

Scale and Items	Per cent responding "True" to item among examinees enrolled at one of the colleges or universities in	
	Group A* (N=398)	Group B* (N=209)
1) FACULTY PRESS FOR AFFILIATION. The faculty keeps pretty much to itself and rarely fraternizes with the students. (F)	26.4	70.6
2) FACULTY PRESS FOR DIRECTIVENESS. In most courses students do not know what the topic of the next lecture will be because the lecturer rarely announces it. (F)	12.8	31.3
3) FACULTY PRESS FOR ENTHUSIASM. Faculty members put a lot of energy and enthusiasm into their teaching. (T)	84.2	41.7
4) FACULTY PRESS FOR ACHIEVEMENT. Teachers here expect, and usually get, excellence in the academic performance of students. (T)	81.4	28.4
5) FACULTY PRESS FOR COMPLIANCE. Instructors often waive requirements for admission to their courses. (F)	61.6	12.8
6) FACULTY PRESS FOR SUPPORTIVENESS. Teachers are sensitive to student complaints and grievances and frequently try to remedy the situation. (T)	78.4	47.9
7) FACULTY PRESS FOR HUMANISM. Very few of the professors here try to get students interested in the humanities. (F)	4.3	62.6
8) FACULTY PRESS FOR INDEPENDENCE. There is little opportunity here for pursuing independent study under the supervision of faculty members. (F)	7.3	56.9
9) FACULTY PRESS FOR VOCATIONALISM. The college offers many really practical courses designed to prepare the student for his occupation. (T)	29.1	86.7

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*Colleges in Group A are 12 institutions deviant in college press in directions associated with increased student motivation for advanced training. Colleges in Group B are 6 institutions deviant in college press in directions associated with decreased motivation for advanced training. Average press scores

Table 4
(contd.)

Scale and Items	Per cent responding "True" to item among examinees enrolled at one of the colleges or universities in	
	Group A* (N=398)	Group B* (N=209)
10) STUDENT PRESS FOR COMPETITION. The high calibre of students here puts a lot of pressure on one. (T)	86.9	43.1
11) STUDENT PRESS FOR ESTHETICISM. There is a lot of interest here in poetry, music, painting, sculpture, architecture, etc. (T)	79.1	22.7
12) STUDENT PRESS FOR REFLECTIVENESS. There would be a capacity audience for a lecture by an outstanding philosopher or theologian. (T)	89.7	35.1
13) STUDENT PRESS FOR SOCIAL CONFORMITY. Students think about dressing appropriately and interestingly for different occasions -- classes, social events, sports, and other affairs. (T)	56.0	65.1
14) STUDENT PRESS FOR INTELLECTUALISM. Students here rarely get excited about a campus speaker. (F)	16.3	64.1

---

at each school were derived by scoring as "1" each response in the keyed direction (T or F, shown in parentheses), and adding these over the 10 items in each scale. Only one item in each scale is shown here.

Enthusiasm? Is it good for students to exert strong press for Competition, Estheticism or Social Conformity?

Student Perceptions of College Press as Evaluative Criteria

At least part of the answers to these questions can be determined by study of the kinds of college press associated with each of the two criteria already described. Before considering these relationships, however, we should note that such college press scores may be used as criterion measures themselves. Thus it is appropriate to ask: How good a job are we doing in selecting and training students in view of what students typically say about their college environment? Whether it is "good" for a college to create an unusually strong image of vocationalism depends, of course, upon the college's objectives. A technological institute which does not produce a strong image of vocationalism might conclude that its curriculum is in need of revision. On the other hand, a liberal arts college whose aim is to produce graduates with an appreciation of our cultural heritage might well prefer to have an image of strong humanism. In short, correlational data can provide only part of the answer to the question of whether it is good for a college to be deviant on a given press scale. An equally important part of the answer, which cannot be considered here, must be provided by the college, when it decides whether the image it creates among students is consistent with its objectives.

Student Characteristics Related to Retention

Correlations between student characteristics and the retention criterion are shown in columns 1 and 2 of Table 5. The first column shows the validity of each of ten characteristics for predicting retention during the first two years of college among selected examinees who enrolled in many different colleges. The second column shows the extent to which we can predict the percentage of each college's examinees who will complete the first two years in normal progression, knowing the percentage who had each characteristic at the beginning of college. The two sets of correlations differ since in column 1 we weight observations on individual students equally, while in column 2 we weight observations on colleges equally even though some colleges enrolled more than ten times the number of examinees that others enrolled.

Both modes of analysis indicate that high college aptitude test scores, early plans to seek graduate or professional training, and choice of college on the basis of its "high educational standards" are significantly related to the retention criterion at a high level of confidence. Of course, the correlations shown for aptitude test scores are attenuated, since the student sample was selected on the basis of cut-off scores on the aptitutde test. We would expect somewhat higher correlations for aptitude measures among students

Table 5

STUDENT ATTRIBUTES RELATED TO RETENTION AND ASPIRATION CRITERIA

Student attribute	Analyses using student as sampling unit[a]	Analyses using college as sampling unit[b]	
	Correlation with retention at college of initial enrollment	Correlation between per cent of enrollees with given attribute and	
		retention rate	changes in aspirations[c]
	(1)	(2)	(3)
Held freshman scholarship	.20**	.22*	.18*
Had NMSQT score equivalent to national percentile rank of 86 or greater[d]	.16**	.44**	.15
Initially planned to seek graduate or professional training	.14**	.43**	---
Attending college as resident during freshman year	.11**	.22*	.16
Chose college on basis of its "high educational standards"	.09**	.34**	.15
Family can pay $800 or more per year for college costs	.07*	.30**	.21*
Attending college more than 50 miles from home	.06*	.22*	.06
Mother attended college	.03	.23*	.11
Father attended college	.02	.28**	.17
Male	.00	.21*	-.04

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[a] Tetrachoric r's based upon a random sample (N=3,130) of respondents to follow-up survey.

[b] Product-moment r's based upon 140 colleges.

[c] Residuals shown in Figure 2.

[d] Median NMSQT score of enrollees at college used in columns 2 and 3.

*$p < .05$.

**$p < .01$.

less highly selected, or not selected, with respect to aptitude. Holding a freshman scholarship, attending college as a resident, and being from a relatively well-to-do family were also significantly related to retention in both analyses. Incidentally, success in winning scholarship offers had a correlation of .49 with the number of scholarship applications made, but only a correlation of .32 with aptitude test score. Hence at least part of the greater tendency of scholarship winners to continue in college in normal progression may be due to their greater educational motivation. Sex had no correlation with retention among examinees generally. The correlation of .23 for sex, shown in column 2, is due to retention differences among colleges very deviant in the percentage of men enrolled. Colleges for women in our sample had only a 10 per cent lower average retention rate than the colleges for men, but because these colleges are so deviant they have a marked effect upon the correlation.

To summarize, these results suggest that colleges can improve their retention rates by selecting students who have high aptitude test scores and who exhibit signs of strong motivation for higher education. The data suggest only a few of these "signs": namely, early plans to seek advanced degrees, seriousness of purpose (as indicated by reasons for college choice), and numerous scholarship applications. Undoubtedly others can be discovered by research conducted by admissions officers at their individual institutions.

The last column of Table 5 shows the correlations of student characteristics with changes in degree aspirations. These results require little comment, except to say that none of these characteristics seem particularly promising as predictors of the extent to which students become interested in seeking advanced degrees.

College Press Related to Retention and Changes in Aspirations

In Table 6 we turn to the question of whether it is "good" for a college to be high or low on each of the press scales previously described. As in the preceding table, the data have been analyzed in two ways: weighting observations on individual students equally we have the results in columns 1 and 2; weighting observations on colleges equally we have the results in columns 3 and 4.

In the first analysis (column 1) we asked whether men having press scores above the median on a given scale increased their aspirations more or less than those having press scores below the median. For example, we may think of the high scoring men on the Enthusiasm scale as being exposed to one kind of educational treatment, and the low scoring men as being exposed to another kind. Do these treatments have different effects upon the student's motivation for advanced training? By assigning numbers to the five aspiration levels, as shown in Table 3, we can compare the average aspiration levels for each treatment group after two years of college. Covariance analysis, which is a

Table 6

COLLEGE PRESS RELATED TO ASPIRATION AND RETENTION CRITERIA

	Aspiration				Retention	
	Analyses using student as sampling unit (men only)[a]				Analyses using colleges as sampling unit (men and women)[b]	
College Press Scale	Covariance analysis (controlling initial aspiration level)		Sig. of diff. in press scores of changers and non-changers		Correlation between mean college press score and	
	(1)		(2)		(3)	(4)
	Direction of relationship	F-ratio	Direction of relationship	t	Residuals (Fig. 2)	Retention rate
Faculty press						
Enthusiasm	+	46.45**	+	4.00**	+.07	+.32**
Humanism	+	25.42**	+	6.50**	+.20*	+.28**
Affiliation	+	23.58**	+	3.95**	+.18*	+.24**
Independence	+	23.32**	+	5.60**	+.13	+.33**
Compliance	-	19.88**	-	6.40**	-.14	-.29**
Vocationalism	-	8.48*	-	1.89	-.22*	-.36**
Achievement	+	5.90*	+	3.13**	+.10	+.31**
Supportiveness	+	5.74*	+	3.39**	+.14	+.08
Directiveness	+	.01	+	2.26*	+.05	+.10
Student press						
Estheticism	+	24.48**	+	2.67**	+.13	+.32**
Reflectiveness	+	7.32**	+	1.78	+.15	+.39**
Intellectualism	+	7.01**	+	4.22**	+.15	+.38**
Social Conformity	+	.41	+	.38	+.02	.00
Competition	+	.23	+	1.85	+.16	+.39**

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[a] Based upon college press reports of 2,405 men.

[b] Based upon college press means at 140 colleges calculated from reports of 4,215 men and women.

*$p < .05$.

**$p < .01$.

statistical method of equating groups with respect to one or more control variables, was used to control group differences in initial aspirations. The plus sign in the first column of Table 6 indicates that the group having high scores on a given press scale increased their aspirations on the average more than the group having low scores on that press scale. It can be seen that 11 of the 14 press scales were significantly related to changes in aspirations. On 9 of these 11 scales high press scores were associated with increases in aspirations, while on 2 high press scores were associated with decreases in aspirations.

In contrast to these results for men, the covariance analyses for women yielded F-ratios which were insignificant, except for the comparisons on the Affiliation and Compliance scares -- and even these were only of borderline significance. The directions of the relationships for women were the same as those shown for men in Table 6.

Since it is necessary in using the covariance method to make a number of assumptions which some investigators will prefer not to make (Astin, 1962) an alternative method of analysis (Thistlethwaite, 1962b) is presented in column 2 of Table 6. Here we ask whether men who increased their aspirations reported different kinds of college press than those who did not change, or who lowered, their aspirations. Thus, among men who initially planned to seek only the bachelor's degree, we compared the average press scores of those examinees who increased their aspirations and those who did not. Similarly we compared the average press scores of "changers" and "non-changers" at each of the higher aspiration levels shown in Table 3. The results shown in column 2 of Table 6 represent combined tests of significance in which differences are summed for students having different initial aspirations (Mosteller and Bush, 1954, p. 330). The plus sign in this column indicates that groups increasing their aspirations tended to have higher average press scores than the groups decreasing their aspirations. It can be seen that the results generally confirmed those obtained by the covariance method.

Considering only the press scales which both methods of analysis showed to be significantly related to the aspiration criterion, it appears that strong faculty press for enthusiasm, humanism, affiliation, independence, achievement, and supportiveness, and strong student press for estheticism and intellectualism are "good" in the sense that they tend to lead to increased aspirations. On the other hand, faculty press for compliance appears "bad" in the sense that it is associated with decreases in motivation for advanced graduate or professional training.

We have seen that the press scales were associated with changes in aspirations among men but were largely unrelated to aspiration changes among women. It is not surprising, therefore, that the correlations (based upon the data for men and women) shown in column 3 of Table 6 are relatively low. Nonetheless it is apparent the directions of the relationships are confirmed without exception when we use the college as the unit of analysis.

Finally, the last column of Table 6 shows correlations between college retention rates and mean press scores. In general, the characteristics of college environments which seem to motivate men to seek advanced degrees are the same characteristics which encourage students to continue in school in normal progression. Thus strong faculty press for enthusiasm, humanism, affiliation, independence, and achievement, and strong student press for estheticism and intellectualism make for high status on both criteria. On the other hand, colleges with unusually strong faculty press for compliance and vocationalism tend to have both poorer retention rates and less influence upon the degree aspirations of students. Only one of the 14 press scales was consistently unrelated to the two criteria selected for study. Apparently it is neither "good" nor "bad" for a college to be deviant with respect to student press for social conformity.

Summary

To summarize, it is clear that at least some of the observed differences between colleges in retention and productivity rates can be accounted for in terms of the effects of different selection and training policies. Although the results reviewed here do not permit us to define in great detail the selection and training policies which will maximize these rates, they do suggest some of the variables that influence the student's educational motivation. The variables identified here are, of course, ones that affect retention or increases in degree aspirations for college students generally. The question of whether they are useful for administrative officers at individual colleges can be answered partly by institutional research programs, and partly by deciding what educational outcomes and images we want to create.

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PART VI

THE CONDITIONAL ADMISSION OF UNIVERSITY STUDENTS

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PERFORMANCE IN PRE-ADMISSIONS SUMMER COURSES IN RELATION TO SUBSEQUENT PERFORMANCE IN THE UNIVERSITY OF TENNESSEE[1]

James R. Montgomery and Gerald H. Whitlock
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Frankly, this is a fish story: for it has to do with freshmen -- traditionally (especially two or three generations ago) known as fish. Naturally, the story has a moral; in fact, two morals: (1) be careful what you as admissions officers promise about your institution's courses, and (2) a little cookbook research which you and your staff can perform without involving computers or high level statisticians may serve highly useful purposes for you.

Research in the area of pre-admissions or orientation courses may have applications to the work of admissions officers in several areas:

1) As guidance counselors for incoming freshmen, admissions officers find themselves called upon frequently to discuss types of courses which may be helpful to a prospective student.

2) Admissions officers may teach such courses or have some responsibility in the student personnel complex of the institution for such pre-college courses.

3) Admissions officers (and the remainder of the academic community) should challenge that effort or idea which has "always been used" or perhaps is proposed as being "correct," whereas in reality no one really knows what evidence exists regarding its value.

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[1] The research design, some of the tables, and selections from the conclusions of this paper are from Gerald H. Whitlock and James R. Montgomery, "College Preparatory Course Work," Journal of Educational Research, 1962.

This paper will review some of the applicable literature and report some of the findings of a study of "performance in pre-admissions summer courses in relation to subsequent performance in the University of Tennessee."

Background of the Study

For several years the University of Tennessee has offered special summer courses for high school graduates planning to become college freshmen.[2] A student may elect to take any one (but not more than three) of the following non-credit courses (25 hours of classroom time each): "How to Study," "Developmental Reading," "Preparatory English," or "Preparatory Mathematics." (Such courses are hereafter called "orientation" courses, but should not be confused with that type of program conducted briefly before the college year begins for freshmen which is called by such titles as "welcome" or "orientation week.")

Such courses, which are generally thought to be helpful, should be reviewed to assure that there is adequate justification for their existence. It is no longer sufficient either to initiate or to evaluate a course using procedures such as those described in a recent issue of the journal of a state teachers' association, which shall remain unnamed. Here, an ambitious guidance worker decides that a how-to-study course will be of service to a group of students and offers a non-credit course on her own time, to be taken as an addition to the regular course work by students. After the students complete the course, the guidance director asks them to evaluate it, and on the basis of their comments, plus her own experience, recommends to school officials that the course be made a regular part of the school's curricula and scheduled classes taught in study habits, methods, etc. This example is probably not atypical of the way pre-freshman orientation courses start and the way they are usually evaluated.

Did the course _really_ help the students, and do the orientation courses offered each summer in the University of Tennessee actually aid a student in later college work? Since individuals enrolling in Tennessee's orientation courses do so in order to help themselves in their freshman year, it seems reasonable to expect that such students would profit by the courses; at least they should do no worse in college than their counterparts -- the freshmen who do not take these courses.

Freshman orientation courses which give information on study habits, reading practices, and use of a library are found in many institutions. At times required and often highly recommended, such courses, which are usually remedial in nature, short in duration (for example, one quarter) and usually for freshmen or occasionally sophomores, have become more frequent in recent years. (See, for example, Greene, 1954, and Blake, 1956.)

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[2] College credit is not given for these courses. The Division of University Extension, which administers this program, uses regular University faculty members to teach the courses.

Based on findings at the University of Tennessee, it seems that a note of caution is advisable and that such work should be evaluated in order to assure that the course is really helping the students involved.

Problem and Procedure

This study sought to determine the effect of the summer program on first-quarter college grades of the students involved. Those enrolled in the summers of 1959, 1960, and 1961 were included in the review. Students who took one or more of the pre-freshman courses and later entered the University of Tennessee (the Experimental Group) were compared with a matched group who did not take the courses (the Control Group).

For each individual in the Experimental Group a person was selected as a member of the Control Group who had the same ACT score, same sex, entered the same college, and either lived on or off the campus. Efforts were made to keep the high school grade-point averages close, but in certain cases a significant difference occurred in them. These differences in high school grades, however, do not comprise a pattern and fail to correlate with college grade-point averages or specific course college grades.[3]

In a study of the 1960 freshmen, Cureton (1961) observes that while the over-all high school grade-point average of U. T. freshmen is 3.0, the over-all college grade-point average for the freshman year is 1.8. Cureton

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[3] The mean high school grade-point average for the Experimental Group was 2.5, which is significantly lower than the total freshman mean grade-point average of 3.0 (in the fall of 1961), but not significantly different from that of the Control Group (also 2.5). In the following cases there developed a significant difference between high school averages for the control and experimental groups.

	t	Significance	
Table 1	2.13	$< .05$	(control group exceeds in 1959)
Table 2	3.08	$< .01$	(experimental group exceeds in 1960)
Table 3	2.68	$< .05$	(control group exceeds in 1959)

In each of the above cases the correlation between high school grade-point average and first quarter over-all grade-point average or the course grade was computed and found not significant. As a result, an analysis of covariance was not necessary.

concludes that those entering U. T. with less than a 3.0 ("B") average will have to work diligently to overcome poor high school preparation. Since students taking the orientation courses had a 2.5 cumulative high school grade-point average, it would appear that many of the enrollees needed some type of remedial course work.

Comparing the grades of the Experimental and Control Groups at the end of the first quarter in the University of Tennessee as full-time freshmen, the difference in achievement could be obtained. Using a "t" test, with the matched pair design, the significance of the difference in grade-point average was determined for the individual course (in the case of "Preparatory English" and "Preparatory Mathematics") or over-all college grade-point average (for "How to Study" and "Developmental Reading" courses).

Results

"How to Study" Courses

A review of the grade-point averages of the Experimental Group and the Control Group appears in Table 1. The Experimental Group took the course in improving study methods.

Table 1

COMPARISON OF THE EXPERIMENTAL GROUP IN THE
"HOW TO STUDY" COURSE WITH THE CONTROL GROUP
ON THE BASIS OF FIRST QUARTER OVER-ALL GRADE-POINT AVERAGE

Year	N	Control Mean College GPA	Experimental Mean College GPA	t	Significance
1959	9	1.95[a]	1.22	2.18	$< .05$
1960	15	1.84	1.43	2.58	$< .025$
1961	16	2.04	1.65	4.51	$< .01$
Combined	40	1.95	1.47	4.07	$< .005$

[a] All grade averages expressed in terms of a four point system where "A" = 4 and "D" = 1.

Data in Table 1 indicate that students taking the "How to Study" course consistently scored lower in their first quarter of college academic work than did those in the Control Group.

The college grade-point averages obtained by students in the Experimental Group (Table 1) point out the fact that many of these people are in serious academic difficulty. Fisher (1962) carefully following for four years the academic success of students enrolling in 1955, finds that grades received in the second and third quarter of the freshman year run lower than first quarter grades. While there is a slight rise in grades in the sophomore year, the increase is not statistically significant. The Experimental Group, which fell below the over-all freshman grade-point average (1.8), needs some type of help academically but perhaps not the "How to Study" course in which they enrolled.

An excellent report on research concerning study-skills courses has been prepared by Doris R. Entwisle (1960). Examining twenty-two studies on this topic, Entwisle concludes:

1) There is a great variety of "How to Study" courses with an even greater range of content and a trend toward establishing more courses of this type.

2) Students who take the courses usually show improvement, although the amount may be small or large. Only two studies on study-skills courses report negative or not-helpful results.

3) Students electing such courses receive greater benefit than those required to take them.

A detailed report of the positive benefit derived from a study-skills course is found in an article by Shaw (1955) which tells of the positive improvement in grades during and following the time when the "How to Study" course was given. The Experimental Groups which took the course continued to do better than Control Group students until the latter had also taken the course.

Since students in the University of Tennessee elect these courses and the preponderance of reported research points to positive gain, the data in Table 1 are contrary to the usual findings in study-skills course evaluation.

"Developmental Reading"

A vast amount of material reporting experiments in reading programs has been published. Perhaps the starting point for reviewing this literature is with Robinson's (1950) discussion of the problems and usual deficiencies in such research. Robinson states that the researchers had failed to prove conclusively what effect, if any, resulted from college reading programs. Problems frequently uncontrolled were level of motivation and the testing and retesting of only the students who took the reading course without regard to Control Groups.

Three out of four of the following reports on reading programs, which appear representative in the field, disclose helpful results.

1) Reed (1956), evaluating a reading program for students enrolled in a nursing curriculum, could detect no significant difference in a matched pair design between those who took the reading course and students not taking it.

2) Wittenborn (1944), found that students entering Yale University whose records indicate they would make below a 2.0 grade-point average based on low scholastic aptitude or math aptitude score on the College Entrance Examination Board Test could improve their chances of passing and exceed their scholastic prediction by taking a remedial reading-study course. Students in a Control Group not electing the course failed to equal their scholastic predictions and made poorer grades. Wittenborn's research underlines the fact that a reading program would improve over-all scholastic standing, not particularly specific course grades.

3) In a study of students placed on probation who were required to take a compulsory study and reading-training program, Blake (1956) concluded that "considerable" academic success might be attributed to this required course.

4) In a survey on a reading program in Cornell University, McDonald (1957) found that the Experimental Group which took the course exceeded the grade-point average of the Control Group the first semester to a statistically significant degree and exceeded the Control Group for another two semesters in cumulative grade-point average but not to a statistically significant degree. The Experimental Group had fewer drop-outs (to a statistically significant degree) than the Control Group.

The results of a course in "Developmental Reading" in the University of Tennessee on the Experimental Group as compared with the Control Group without the course are reflected in Table 2. After 1959, in which there appears an unusually high college grade-point average in the Control Group, at least in relation to other college grades shown in this study, no significant difference appears between the two groups, although the Control Group's mean grade-point average consistently runs higher.

Table 2

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "DEVELOPMENTAL READING" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER OVER-ALL GRADE-POINT AVERAGE

Year	[illegible]	Control [illegible] College GPA	Experimental Mean College GPA	t	Significance
1959	[illegible]	[illegible]	1.89	3.42	< .01
1960	10	[illegible]	1.37	1.23	N/S
1961	9	[illegible]	1.63	1.31	N/S
Combined	25	1.96	1.59	2.94	< .01

The students in the University of Tennessee who took "Developmental Reading" did not show evidence of an immediate advantage in scholastic success over their counterparts; in fact, they did not do as well as their counterparts.

"Preparatory English"

Research studies in courses in preparatory or remedial English are almost non-existent. In a study reported at Pennsylvania State University, all freshmen scoring low on an English placement test were required to take a non-credit course in remedial English. Using success in the first or regular freshman composition course as the criterion for measurement, the writers reported that it did not matter whether the remedial course was taken in the summer or fall semester. The students completing the remedial course passed regular freshman English almost as well as a Control Group of students of the same general ability but who had passed the English placement test. The researchers assumed that there had been an improvement in the scholastic performance of students who took the remedial English course. (Zeigler and Herman, 1959)

Table 3

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "PREPARATORY ENGLISH" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER GRADES IN FRESHMAN ENGLISH

Year	N	Control Mean College GPA	Experimental Mean College GPA	t	Significance
1959	10	1.60	1.20	1.08	N/S
1960	13	1.54	1.77	-1.14	N/S
1961	16	1.25	1.13	.50	N/S
Combined	39	1.44	1.36	.50	N/S

Results from "Preparatory English" as seen in Table 3 indicate no significant differences among the groups. Those who took the course in "Preparatory English" performed in college English in almost the same manner as the Control Group. In 1960 the Experimental Group did slightly but not significantly better. Since the course closely parallels the content of freshman English, lack of success is somewhat surprising. Students taking it, however, are not receiving any detrimental effects.

"Preparatory Mathematics"

Little research has been done on the evaluation of remedial programs in mathematics. At Cornell University, Ahmann and Glock (1959) studied what effects a remedial course in mathematics might have on students enrolled in agriculture who elected to take it on a voluntary basis. The researchers found no positive scholastic gain attributable to the remedial course in the later courses involving mathematical computations which the Experimental Group took; however, all connected with the course believed it definitely served to help the students enrolled.

Although the numbers involved are small, students in the University of Tennessee enrolled in the "Preparatory Mathematics" course (see Table 4) performed two years out of three significantly lower than the Control Group in freshman mathematics. It appears safe to say, therefore, that pre-freshmen electing this mathematics course will do no better than students who do not take it.

Table 4

COMPARISON OF THE EXPERIMENTAL GROUP IN THE "PREPARATORY MATHEMATICS" COURSE WITH THE CONTROL GROUP ON THE BASIS OF FIRST QUARTER GRADES IN FRESHMAN MATHEMATICS

		Control	Experimental		
Year	N	Mean College GPA	Mean College GPA	t	Significance
1959	4	1.75	.50	2.61	∠ .05
1960	4	2.25	.50	3.66	∠ .025
1961	7	1.86	1.86	0	N/S
Combined	15	1.93	1.13	2.18	∠ .025

Summary

At first glance the results of these pre-freshman courses at the University of Tennessee seem to leave much to be desired; however, the indications are that there is a much greater and more fundamental problem involved. Students elect to take these courses, not knowing whether they are really deficient in the skill involved or not. Having taken the skill course, they either fail to improve or perform worse than a Control individual.

Possibly a selecting process is occurring which brings a certain type of student to take these courses, thereby establishing a variable which this research failed to control. These students, for example, give up various other summer plans in order to enroll in the courses which they elect to take, which their parents believe they need, or which some other person has advised them to take. Therefore, either the student or someone in which the student has confidence has indicated a belief that they believe the prospective freshman is weak in a given subject or at least has room for improvement in certain skills before entering college. If this theory is right, students in the Experimental Group may have a feeling of inadequacy or lack of self-confidence which is strengthened and confirmed by their initiation into college work. This theory has definite application to admissions officers, for to what extent do these individuals know the results of their counseling of academically weak individuals? Are they destroying or perhaps building up false self-confidence? Another possible theory is that pre-freshmen upon enrolling expect their summer's coursework experience to serve as a panacea for all their academic difficulties. (A study at the University of Tennessee is being designed to test these theories.)

Students who take preparatory courses and later enroll in the University of Tennessee apparently receive little immediate benefit from these courses as far as grades and grade-point averages are concerned. Of course, if in actuality such persons are influenced in their college success by non-intellectual factors, such as self-confidence, then there may have been improvement by the Experimental Group which this research did not record.

This study suggests that the teaching-learning situation in elective preparatory courses may need to be reviewed to see if there are certain other approaches in teaching these classes which might produce results different from those obtained in this study. Different teaching-learning situations might be more suitable for the type of individuals enrolling.

On a negative, but hopeful, note this fish story must be ended. Perhaps you admissions officers will recall the morals of this paper: (1) look beyond the obvious or what seems to be the case, and (2) a little research which you and your staff can perform may lead you into some challenging fields of thought and study. Your efforts in research may save you from fouling or being fouled by your freshmen (fish).

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THE HISTORY, DEVELOPMENT, AND RESULTS OF PROGRAMS PERTAINING TO MARGINAL ADMITTEES AT THE UNIVERSITY OF MARYLAND

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Introduction

Before any attempt is made to describe the now discontinued on-trial admission policy and program at the University of Maryland, one should understand the conditions leading to the setting up of this program. In general, it can be said that when a college or university decides to accept marginal or sub-marginal students, it does so for one or a combination of several reasons: (a) pressures brought to bear, (b) desire to increase enrollments, and (c) a genuine desire to extend its services to a greater proportion of the population.

The program which led to the on-trial admission policy was begun in 1947 during the peak of "G.I. Bill" enrollments; it is, therefore, obvious that the Maryland program had nothing to do with the bolstering of sagging enrollments. There was, however, some talk of modifying the little-known Maryland law which required the University to accept all recommended Maryland resident high school graduates. The law said to have been under consideration would have required the admission of any resident high school graduate. The opinion is held in some quarters that the on-trial program was begun to avoid the adoption of such a law. While this possibility undoubtedly supplied some of the initial impetus for the move, the following information should show rather conclusively that pressure was far from the only reason:

1) Marginal admissions were not confined to Maryland residents. (For those who wink knowingly, let me assure you that out-of-state marginal admissions were not confined to star football players.)

2) After World War II many persons who previously would not have considered going to college were now applying for admission. Moreover, admissions policies in effect immediately following World War II precluded the possibility

of admitting some "late bloomers" who were potentially excellent students. It might be noted here, by inference, that some excellent students had been excluded, for in the first year of operation of the provisional admissions program to be described, four provisional admittees made the Dean's List, having achieved averages of 3.5 or better.

3) Every effort was made to assist the marginal admittees to adjust to the impact of college, to overcome past deficiences, and to achieve the college education which they desired.

In this presentation an effort will be made to describe briefly only the important aspects of the Maryland program, leaving more elaborate explanations for those areas where there may be questions. In addition, some effort will be made to show that any major changes in programs were made on the basis of research and/or changing conditions.

The College of Special and Continuation Studies

In 1947, the University of Maryland established the College of Special and Continuation Studies (CSCS) with the aim of extending its services to heretofore unreached segments of the population. The Division of Part-Time Studies (since changed to University College) was for employed persons who wished to pursue their college work on a part-time basis at any one of the University's many centers. The On-Campus Division was for full-time day students on the University's main campus in College Park. The Director of the On-Campus Division was to administer a special program for high school graduates who, in general, satisfied the quantity conditions for admission but whose quality preparation might have been deficient for certain curricula, and/or whose records did not entitle them to the recommendation of the high school principal. These students, therefore, were admitted to CSCS rather than to the degree-granting college to which they had applied. It might also be added that, at this time, junior college facilities were practically non-existent.

In the original plan approximately 100 marginal students were to be admitted for a one-year (two semester) period. They were to achieve the 2.0 ("C") average necessary for transfer to the degree-granting college of their choice at the end of this period or be dropped from the University.

Program

A student admitted to CSCS, because of his "inadequate" background, was given a special program to assist him in making up his deficiencies.

These students were to enroll for not less than 12 semester hours nor for more than 16 semester hours. The normal student load is between 15 to 19 semester hours. An abbreviated load, however, was the only consideration given to these students insofar as the regular curriculum was concerned. Each student was required to prove his competitive position by scheduling a variety of courses and by competing with "regular students." In other words, there were no special classes in the regular curriculum offerings for these marginal students.

In order to insure further that these students would not be able to achieve the necessary average by taking courses which were unique in their indicated specialty, certain basic courses were required. Each CSCS student was required to register for the courses required in the University's American Civilization Program: English, American Government or Sociology 1, Military Science and Physical Education. These courses accounted for 10 semester hours. A student now could elect, with advisement, from 1 to 5 semester hours in courses required in the college of his choice.

In addition to the general University requirements and the college requirements, each CSCS student was required to take one special course, College Aims. The College Aims course was a special, effective study and orientation course designed to assist these students in adjusting to college life, in learning how to study and, in many cases, in adjusting their vocational orientations. The second semester of College Aims was a study-type reading course. In the original program, there was a definite attempt made to help these students to apply the techniques they had supposedly learned in College Aims. Each student was required to attend 20 hours of supervised study hall each week.

After one semester of experience with study halls they were abolished. Students were now required to attend compulsory tutoring sessions. When it was definitely established that compulsory attendance at either a study hall or a tutoring session was not productive, all such requirements were abolished and voluntary attendance at tutoring sessions was instituted. To carry out the aim of applying effective study techniques, the Director (on the suggestion of many successful students) instituted two hours of laboratory work which were added to the two hours of lecture in College Aims. Before this new procedure was begun, each entering CSCS student could choose between Sociology of American Life and American Government. It was now decided that each new student would be required to take the sociology course and that they would use this course as practical material in the College Aims laboratory. This procedure was accomplished with the assistance of both the Sociology and Government and Politics Departments.

There was one other aspect of this program which merits some consideration. The director of the program who taught the College Aims course was also the advisor and counselor for these students. This meant that the advisor for these students was more readily available for consultation than

than most other advisors who were also full-time faculty members. In addition, it was found that the College Aims course served to encourage students to make appointments for counselling and advisement. It might also be added that during the fourteen years this program was in operation there was seldom opportunity to call students in for consultation; voluntary appointments consumed most of the available appointment time.

In effect, the above program, with the modifications noted, was the program in effect until the termination of on-trial admissions in 1961. Certain changes, however, were made in the reasons for and methods of dropping and transferring these students. Originally, a CSCS student was to achieve his 2.0 average at the end of two semesters or be dropped. After the first year it was decided to allow those students who had not been dropped by the University for academic failure to continue in the provisional program until they either withdrew or achieved the 2.0 average necessary for transfer to a degree-granting college. It was also indicated that these students might perform at a higher academic level if given the incentive to do so. Therefore, with the agreement of the deans of the various colleges, it was decided in September, 1950, to allow any new freshman who earned a 2.5 average for his first semester to transfer immediately to the college of his choice rather than waiting for two full semesters. It should be noted that this procedure substantially increased the number of 2.5 averages earned by marginal students during the first semester in attendance. For the two years immediately preceding the announcement of this procedure only 3 per cent of the CSCS students earned 2.5 averages or better.

In 1957, when the University of Maryland adopted its new Academic Probation Plan, certain aspects of the plan applied directly to the marginal admittee. These students who formerly had been able to remain in school indefinitely, now, in addition to being subject to all the regular University academic regulations, had to meet certain other conditions. The marginal admittee had to earn at least a 1.5 cumulative academic average by the end of his second semester and a 2.0 average by the end of his fourth semester or be dropped from the University. This procedure was based on a study done by the Director of the On-Campus CSCS division which showed that of the marginal students admitted in September, 1947, 1948, 1949, and 1950, who went on to graduate, 96 per cent of the students had at least 1.5 averages by the end of two semesters and 90.1 per cent had at least 2.0 averages by the end of four semesters.

Other changes were made in the procedures for reinstating marginal admittees who had been dropped for academic failure. During the first year of the program, CSCS students who had been dropped for academic failure were denied reinstatement unless dropped for reasons beyond their control. Upon the urging of the Director of the CSCS program, who was also a member of the Reinstatement Committee, the CSCS students were reinstated under the same conditions which applied to regular students. The stipulation was made, however, that a study would be made to ascertain what progress was made by these readmittees. The follow-up study showed that not one CSCS student who was reinstated after academic failure progressed to graduation. Supported by this information the Reinstatement Committee subsequently refused to reinstate any marginal student who was dropped for academic failure unless such failure was due to circumstances beyond the student's control.

In 1957, when the new Academic Probation Plan was adopted, the new Petition Committee reconsidered the position of refusing to reinstate the marginal student and subsequently modified this position. The new position was that any marginal student who had been dropped for academic reasons would be considered for reinstatement if he: 1) joined the armed services for two or more years, 2) attended a junior college and completed at least 12 semester hours of credit with an average of "C" or better, or 3) attended a preparatory school for a full semester and achieved grades which would earn certification and recommendations of the school administration.

Changes in Administration of the Program

In 1953, President Byrd, with the approval of the Administrative Board and the Board of Regents, abolished the On-Campus Division of CSCS and directed that hereafter, marginal students would be admitted to the college of their choice on trial, and that students currently enrolled in the On-Campus Division of CSCS would be transferred to the college of their choice on trial. In effect, only one change was made and that was to place the student under the administrative control of the dean of a degree-granting college. All other procedures remained exactly as they had been before this change was made.

To carry out this new procedure, the old CSCS personnel who would be responsible for the on-trial program were placed under the newly-established Dean of Students' Office (subsequently Executive Dean for Student Life). The former CSCS students and the new on-trial students were handled exactly as before. They were advised, counseled, assigned courses, certified for regular status, etc., by the same personnel as before; the only change was the requirement that they secure a dean's signature before registering. This procedure was continued until the termination of the program in June, 1961.

Changes in Admissions Policies

It will be recalled that the original policy pertaining to the admission of marginal students stipulated that students who were below recommendation and certification and/or were deficient in certain minor aspects of their backgrounds would be given provisional admissions. As time progressed, and considering the relatively large percentages of marginal students who achieved regular status (See Table 1) certain students who previously would have been given provisional admissions were now admitted as regular students.

In 1952 a new Director of Admissions was appointed. At this time a definite attempt was made to standardize admissions procedures. It was now fairly definite that any student who had the traditional "C" average in his junior year and first half of his senior year in high school would be given a regular admission. Students who had less than a "C" average were tested, using the Maryland Test Battery. Among those who were tested, students who scored above the bottom of the "normal range" (roughly above the 30th percentile in each of: Total A.C.E., the Co-op English Test and the Maryland Algebra Test) were given regular admission certificates, all others were admitted to CSCS. By 1953, when the on-trial program was begun, one other change was made: provisional admissions were confined to residents of the State of Maryland.

While the original program for marginal students provided for the admission of approximately 100 students a year, in 1960, 586 new marginal students were admitted. When this new group was combined with the "on-trials" continued from the previous years there was a total of 725 students registered on-trial. It should be added that during this time there was no compensating increase in the number of staff members. In the meantime, summary statistics which were compiled indicated two things:

1) There was a marked decline in the percentage of successful students in the on-trial group with the admissions policies now in effect and with the new Academic Probation Plan.

2) That if the trend in increases in enrollment continued, there would be at least 700 new students admitted on-trial for the fall semester 1961.

Change from On-Trial to Pre-College Summer Session

With the possibility of having such a sizeable percentage of entering students admitted on trial, and in line with the University's policy to raise both admissions and academic standards, and considering the fact that by 1960 more than 97 per cent of the potential marginal admittees came from areas having either junior or community colleges, a new program called the Pre-College Summer Session (PCSS) was instituted. This new program was to being in June, 1961.

On the basis of high school records and pre-college testing, those students who formerly would have been admitted on trial were now given one of three choices:

a) Successfully complete the PCSS before being eligible for admission to the University. In this case students must enroll for 6 semester hours. They must enroll for freshman English (3 hours) and one additional course (3 hours) and they must earn at least a "C" in one course and pass the other.

b) To attend a junior college for not less than one full semester, enrolling for not less than 12 semester hours of work, achieving a 2.0 average, then transfer to the University of Maryland. These students, however, are encouraged to remain in a junior college for at least a full academic year.

c) Attend a preparatory school for one full year and earn the recommendation of the principal or headmaster.

Beginning with the PCSS class of 1962 one additional change was made in admissions policies. A study conducted at the University of Maryland showed significant differences in college grades between regular students with the traditional "C" average in high school and those with below "C" averages who were admitted on a regular status as the result of test scores. The admission policy now is that only students who have at least a "C" average in high school can be admitted as regular students, all other applicants regardless of test scores must pursue one of the three options mentioned above.

Results

Table 1 is a summary of the dispositions of marginal students admitted in the fall semester for the years 1947 to 1958. The percentages in this table do not total 100 per cent because actions such as transfer to another institution, etc., have been excluded in an attempt to simplify the results.

With little or no explanation it can be seen from even a cursory examination of Table 1 that there was a steady though gradual decline in the number of successful students and in increase in the number of unsuccessful students from 1947 until 1958.

The important fact to consider, however, is the rather abrupt decrease in off-trials and the increase in the number of failures beginning in the 1956 group. This was the first group to feel the impact of the new Academic Probation Plan which went into effect in July, 1957. From that point, there are further indications that the groups entering under this plan had even less chance of success. A follow-up study of 361 students of the group which entered in 1958 showed that, at the end of four semesters, 237 students or

Table 1

DISPOSITION OF MARGINAL STUDENTS, 1947-1958, BY YEAR

Year	Total Entered No.	Off-Trial No.	Off-Trial %	Withdrew No.	Withdrew %	Failed No.	Failed %	Did Not Return No.	Did Not Return %
9/47	128	56	(44)	4	(2)	49	(38)	19	(16)
9/48	136	61	(45)	10	(7)	24	(18)	37	(27)
9/49	170	85	(50)	15	(9)	35	(20)	32	(19)
9/50	299	130	(44)	43	(14)	64	(21)	56	(19)
9/51	259	100	(39)	27	(10)	59	(23)	63	(24)
9/52	464	183	(39)	70	(15)	85	(18)	94	(21)
9/53	352	116	(33)	26	(7)	77	(22)	54	(15)
9/54	432	162	(38)	58	(13)	133	(31)	72	(17)
9/55	358	136	(38)	45	(13)	100	(28)	64	(18)
9/56	428	109	(25)	45	(11)	172	(40)	60	(14)
9/57	448	101	(23)	57	(13)	215	(48)	25	(5)
9/58	391	84	(21)	53	(14)	198	(51)	29	(4)
9/59	502	*		*		*		*	
9/60	586	*		*		*		*	

*Final figures not presently available. These figures are shown only to show increases in enrollment.

65 per cent had been dismissed, 64 students or 17 per cent had withdrawn and 60 students or 16 per cent were eligible to continue.[1]

Regardless of whether the totals in Table 1 or the totals in the follow-up study are used, when these figures are compared with the percentages of successful students reported in previous years, the trend is clear. It is necessary only to point out that, considering all groups who entered "on-trial" from 1947 to February, 1950, inclusive, 29 per cent of these students graduated. (See Table 2)

To show the effect the Pre-College Summer Session had on enrollments at the University of Maryland, the following brief explanation is given: The Director of Admissions fully expected, under the old plan, that of approximately 900 high school graduates referred for testing, in excess of 700 students would be admitted on-trial in September, 1961. The announcement of the PCSS program obviously had some effect. Approximately 600 potential marginal students indicated an interest in the PCSS. Of this group, 356 students enrolled with the following results: at the end of the Summer Session, 1961, 176 students (49 per cent) were eligible for regular admissions, 144 students (40 per cent) had failed, and 36 students (10 per cent) had withdrawn. At this time no figures are available for disposition of the 176 students who were given regular admissions.

Conclusions

From the chain of events and figures presented, it can be seen that the admission of marginal students can be an act of kindness similar to the proverbial admission of the camel's nose into the tent. This analogy, if carried to the end, sums up the problem reasonably well. At one extreme, the admission of some of these students constitutes an act of injustice which allows them to continue without ever having had to meet a standard, which is merely a delay of the inevitable, and which helps to perpetuate lack of success. On the other hand, however, a reasonable percentage of these students can be very impressive. Taken as a whole, they may be either a "lovable group" or, in other cases, persistent or verbally facile to the point where they can cause any administrator to feel that he is sitting on the wrong side of the desk. These characteristics along with the rather phenomenal success of a small percentage of the marginal students help many a "yardbird

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[1] Discrepancies among the totals in this study and the totals reported in Table 1 are primarily a result of how the populations were selected. The totals reported in Table 1 account for all new students who registered on-trial in September, 1958. The population in the study report was determined by an early list of students admitted on-trial and does not count those who were admitted after the list was released.

Table 2

FINAL DISPOSITION OF ALL STUDENTS
RECEIVING REMEDIAL EDUCATION AS OF JUNE 1955

Year	Total Entered	Off-Trial		Withdrew		Failed		Did Not Return		Still On-Trial		Graduated	
	N	N	%	N	%	N	%	N	%	N	%	N	%
9/47	128	56	(44)	4	(2)	49	(38)	19	(16)	0	(0)	34	(26.5)**
2/48	44	19	(43)	6	(13)	10	(23)	9	(21)	0	(0)	12	(27.3)**
9/48	136	61	(45)	10	(7)	24	(18)	37	(27)	4	(3)*	42	(30.9)**
2/49	44	22	(50)	5	(11)	9	(21)	7	(16)	1	(2)*	18	(40.9)**
9/49	170	85	(50)	15	(9)	35	(20)	32	(19)	3	(2)*	49	(28.8)**
2/50	53	25	(47)	9	(17)	7	(13)	12	(23)	0	(0)	12	(22.6)**
9/50	299	130	(44)	43	(14)	64	(21)	56	(19)	6	(2)	66	(22.0)
2/51	93	53	(57)	10	(11)	11	(12)	15	(16)	4	(4)	23	(24.7)
9/51	259	100	(39)	27	(10)	59	(23)	63	(24)	10	(4)	16	(2.3)
2/52	92	31	(34)	17	(18)	23	(25)	17	(18)	4	(5)	4	(2.2)
9/52	464	183	(39)	70	(15)	85	(18)	94	(21)	32	(7)	3	
2/53	101	36	(36)	15	(15)	18	(18)	21	(21)	11	(10)	1	
9/53	352	116	(33)	26	(7)	77	(22)	54	(15)	79	(23)		
2/54	76	23	(30)	7	(9)	8	(11)	14	18)	24	(32)		
9/54	424	41	(10)	39	(9)	66	(16)	25	6)	253	(59)		

NOTE: Students who failed and were reinstated or who withdrew and were readmitted are coded in groups according to their final status by 1955.

*All students listed as remaining On-Trial from 9/48, 2/49, 9/49, have returned (been readmitted or reinstated after a period away from school. None has been On-Trial continuously.).

**Average of 29 per cent.

9/54 -- Table 1 -- Total includes eight (8) students who were admitted in summer school and continued in September.

lover" to give both reasonably logical and emotionally tinged arguments in favor of the continued acceptance and salvaging of marginal students. These arguments are often made without considering the cost of such salvaging operations or the alternatives available.

The first alternative -- programs such as the PCSS at the University of Maryland offer a number of advantages over programs which allow for a dilution of the regular university population by admitting all marginal and submarginal students:

1) These programs give the student, (a) who really wants an education, or (b) who is obsessed with the idea of attending "a university," or (c) who is pressured into a four-year institution, the chance to prove his seriousness of intent by performing satisfactorily.

2) They give the student the opportunity to "try college" with a minimum of expense to himself, to his parents, and to the taxpayer.

3) They admit the marginal students during the summer, and, consequently, make greater use of the physical plant facilities and staff personnel.

4) They allow a student who has failed to perform at an acceptable level in such programs the opportunity to transfer to another institution if he desires to do so and is acceptable.

5) They help to cut down the attrition rate in the middle of any given term and, consequently, spread the university budget more equally over the academic year. This last point has almost innumerable ramifications.

6) They allow for the employment of a larger staff for a short period of time. Such a staff would not be available during a regular session. It has also been suggested that a staff employed under such circumstances is more able to counsel re the appropriateness of students' goals without involving academic success or failure.

The second alternative for marginal applicants is to attend a junior or community college. Three points should be made in this connection:

1) Students who do not qualify for four-year institutions can still gain admission to these institutions by satisfactory performance at a two-year school.

2) Marginal students who have their sights set on a baccalaureate degree may be committing a serious error in attending a two-year institution. The research indicates that, while the mean G. P. A. for students transferring from junior colleges is 2.31, subsequent mean G. P. A. at the University of Maryland is only 1.93.

3) There is also the possibility that students who elect the junior college option may, with realistic counseling and advisement, come to accept as appropriate the kind of two-year, terminal program these institutions are able to offer.

There appears to be, however, a third and most appropriate and logical alternative if all factors are considered. Research has fairly well proved that average high school grade is the best single predictor of success in college. It is obvious that since marginal students are given provisional admissions on the basis of substandard high school grades that they are deficient in one of the factors contributing to grades: (a) background, (b) ability, (c) motivation, or (d) practice of effective study methods.

Many colleges and universities have accepted the responsibility of providing additional background courses and programs of study methods and remedial reading. But it does not seem illogical to expect that a student who applies for admission to an institution of higher learning should come equipped with the basic educational tools so necessary for success. While the writer has insufficient evidence and on a very limited number of students, the indications, at the present time, are that students who experience difficulty in college and who return to preparatory schools for additional background perform at a higher level than those students who do not pursue this option. The writer is also aware that the factors operating in this situation are too numerous to discuss here.

In this writer's opinion, therefore, the most appropriate although the least palatable suggestion is that the burden of seriousness of intent be placed upon the marginal or submarginal applicant. Institutions of higher learning should insist on adequate backgrounds. They may provide opportunities such as exist in programs such as the PCSS, but, failing in this, should insist that a substandard applicant acquire an adequate background in basic educational skills either at a preparatory school or in a post-graduate high school program. The acts of dubious kindness in accepting those students ill equipped for success in a world of increasing academic demands will sooner or later have to be terminated. It is time, if I may paraphrase a noted jurist, that we begin to insist on preparing our students for the path and stop preparing the path for our students.

PART VII

MEASURING THE SUCCESS OF A COLLEGE*

Presented by

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*Presented at the Lexington Conference on Institutional Research sponsored by the Southern Regional Education Board at the University of Kentucky, July 16-19, 1962.

MEASURING THE SUCCESS OF A COLLEGE

Nevitt Sanford
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Although I shall speak of particular measures that we might use in evaluating the work of colleges, I think we should look at our topic against a broad background. This will give me a chance to bring in some other of my favorite topics. I shall speak of the objectives of higher education and since these include the fullest possible development of each individual I can touch upon the theory of personality and how it develops. This, in turn, can supply some of the basis for an argument in favor of general education. For empirical support of some of my points I can bring in some findings from our research at Vassar College -- and this will help to highlight a final favorite topic, the kinds of research that are needed.

How is the success of a college to be understood and appraised? First, I would accent the pluralism of goals in American higher education and take the view that, in general, our measures of success will refer to how successful is a given institution in achieving its goals. There must be different kinds of measures of success referring to different kinds of objectives. One of the best criticisms of our book, The American College, appeared in a review in a Polish newspaper. It was by a professor of sociology who stressed the point that the great trouble with this volume was that it put too much emphasis upon the individual, or the development of the individual as an educational goal, whereas a truer objective, a better objective for an institution of higher learning, would be the production of people who really contribute something to society and that the only true measure of the success of such an institution would be the actual achievements of the people whom it produced. He wanted colleges or universities to turn out people who were dedicated to improving society and who were competent to achieve effects that were beneficial to that society. It was pointed out to me by another Polish scholar that this was not just an expression of the current Polish socialist orientation; it was an expression of the traditional Polish outlook on life, one that accents the grand gesture and values the person who throws himself into some great cause, even if it is already lost.

But this does call attention to different kinds of objectives of institutions of higher learning and different ways of appraising that success. In the relatively less developed countries of the world today, typically, the demand is for technicians, for engineers, a great many of them, and in a great hurry.

I recently talked with a professor of engineering from Venezuela who was worried about the fact that the whole university was throwing itself into the task of producing engineers who he felt were not going to be sufficiently educated in the humanities and that this could be very damaging to the country. On the other hand, to take a different extreme, the University College of the West Indies sticks to exactly the same standards as Oxford and Cambridge. A highly selected segment of the population of the islands is just as well educated at this university college as students in Oxford and Cambridge. The trouble is the University College of the West Indies is the only institution of higher learning in the Caribbean. Few people are trained at the technical level. It is interesting to inquire what will serve the underdeveloped areas of the world best in the long run -- this kind of high quality education to which few people can be admitted or some kind of hurry-up technical education that will turn out engineers and more quickly raise the standard of living. I need do no more than mention all the kinds of education that exist in our country: vocational, professional, preprofessional, education for citizenship, education for individual development. All these we have more or less defined, and for each we have objectives. The social scientists, in approaching this problem, are interested in all kinds of objectives, and particularly in what kinds of means favor the achievement of a particular kind of objective. No one objects to the scientific study of the relationship between a given means and a given end. It ought to be pointed out, however, that it is unwise for the social scientist to take such a narrow view of his problem. It turns out in practice that means adopted for the promotion of one end will very likely have implications for a number of different ends, and that judgment about means cannot be based solely on their value in achieving one particular end. All kinds of consequences that flow from these means have to be studied. If one kind of objective is promoted, this typically has consequences for other kinds of objectives which must be considered as well, so that the issue of value is not one that the social scientist can very well escape.

The production of a great many engineers, as in the case of the University of Venezuela, is certainly a legitimate objective and science may inquire how this were best done; but if it is done at the expense of the development of these specialists as human beings with a consequent general deterioration of the quality of life, then we have to look beyond the particular end that our science is promoting. Similarly, if the higher level of education aimed at by the University College of the West Indies disadvantages the great mass of the population, we have to deal with a question of policy that involves much more than a simple means-end relationship.

The success of a college has to be viewed, I think, in a number of different perspectives. When we come to the matter of defining success, we have to realize that it is quite vague, really, and that how it is defined depends on who is doing the evaluating. Academic success, as defined by admissions officers may differ from success as interpreted by the student or his parents, or the captains of industry, or the psychologists, or other groups. There may be conflict among these kinds of conceptions of success. Success in the sense of the kinds of things that are represented by better grades may or may not be of major interest to many students, the majority of whom still regard the greatest benefit of a college education as the chance to make friends with congenial people. Captains of industry may want people who are good at high speed computers and would be unimpressed by other kinds of development. There are bound to be conflicts here within the society, and we have to ask ourselves how they are going to be resolved.

The position that was taken in The American College is that the educators have to take the leading role in saying what the aims of education should be, that they cannot just listen to the demands and hopes and wishes of their constituents. They have to educate their constituents as well as their students, and to stand for things which their constituents may not want right now, but which they will want once the educators have shown them the better aspects of themselves.

Colleges do not help very much with these problems of value when they seek success in the "eyes of the world." We have to distinguish between the success of a college as an enterprise, and the success of a college as an educational institution. Any college is interested in surviving, maintaining itself, and expanding, and if it does, we have to call it a success. This is the kind of success which many of its supporters certainly value. We see this kind of success expressed in buildings, winning football teams, "students from 50 states, and 12 foreign countries," a program for study abroad, and and, of course, a public image of a highly rated college. The thing is to build up a kind of brand name that will ensure that more and more students apply, and thus make possible the recruitment of better and better students.

Colleges that have been successful as enterprises have usually undertaken to provide something for everybody, or they have changed their objectives to meet the changing demands or needs of their constituents. A college might start out as a denominational college, but rapidly put in mechanical arts and liberal arts as constituents who want these kinds of things appear in the general neighborhood. The enterprising college is one that has been alert to the kinds of things that people want to support.

Success in the eyes of the academic world is not exactly the same thing as this public image kind of success. But this problem is just as serious. Success in the eyes of the academic world is usually measured, I think, in terms of how much like Harvard or the "Harvard of the West" the institution has turned out to be, how many Ph.D.'s on the faculty, how many different kinds of departments, how many Nobel Prize winners, in short, how much academic glamour the college can display. This is successful academic social climbing.

I am not saying that this kind of glamourous success has nothing to do with success as an educational institution. There is probably some correlation between the two, but I do not believe the connection is always there or that it is ever very close.

When we come to success as an educational institution, we should distinguish between immediate success and ultimate success. It is one thing to be able to say how good one's graduates are at the time they graduate, how well they test, how much they know as measured by one instrument or another, how many get admitted to graduate school, and things of that kind, but it is something quite different to consider success in later life. As our Polish reviewer pointed out, it matters a great deal what the individual contributes to society, his actual accomplishments or contributions, or, perhaps more from our point of view, what he does with his life. This, of course, means follow-up studies of which we have very few so far. These studies are extremely difficult to perform in ways that permit us to learn anything from them. It is not only that we have to take into account the kinds of people who were recruited in the first place, but we also have to take into account what kind of events intervene between graduation from college and the time when we undertake to assess the individual's accomplishments in life. This, of course, is very, very difficult. An individual may graduate from college and be quite unpromising in the eyes of most of his teachers, but then, owing to some highly educational events that occur within the years following college, he may turn out to be a man of great accomplishments.

So, what do we have? As far as I know, we have mainly studies which show that a college education is worth something in terms of money. We have the kind of studies which suggest that some kinds of institutions produce or have produced more scholars and scientists than others, but there is obscurity as to who was recruited into these institutions in the first place.

We have almost nothing, I think, that would permit the comparison of one college or university with another, or that would permit a safe conclusion as to whether one college actually produced through its own educational efforts, more individuals of accomplishment than did another.

Concerning colleges in general, we do have, despite my earlier remarks, a few studies that show that college-educated people are somewhat more aware of civil liberties issues, and somewhat more in favor of civil liberties, than those who didn't go to college.

We also have some studies of individuals. Mervin Freedman reports in The American College intensive studies of some Vassar graduates which show that some of these young women really got a lot out of college whereas others did not. Such studies do not, of course, permit comparison of Vassar with any other institution, but they do give us valuable information. They direct our attention to just what happens when a young person really gets something out of college and actually shows the benefits in later life.

In short, as far as I know, follow-up studies so far have given no particular institution anything much to shout about, although studies of individuals have shown that in some instances the value of college in their lives has been very great indeed.

There is another point of view that we may take in looking at the educational success of colleges. Are we paying attention to minimal objectives or to maximum ones? It is one thing to turn out many, many graduates who meet some moderate level of accomplishment by some ordinary standard, but quite another thing to turn out individuals who meet some extraordinary standard. It may very well be that different kinds of institutions are needed to produce these two different kinds of success. The British university colleges of the old days were institutions probably quite well designed to produce some individuals whose achievements were truly extraordinary and many, many others who did almost nothing. It's an ironical situation which I think still prevails in many institutions. If you have enough freedom in the institution so that some individuals can be truly excellent and can become truly creative and great, then it may very well be that many of the individuals enrolled will take advantage of the same freedom to do little, if anything.

This brings us to what I think is the most important kind of consideration in this matter, and that is the question of whether we are interested in a final state -- in the actual characteristics of graduates at the time of graduation, regardless of how they got that way, or whether we are interested in how much change actually occurs under the impact of our institutions. It is one thing to set as our goal having graduates who will be a credit to us in the sense that they go to good graduate schools and accomplish a lot in life, but it is something else to ask ourselves how much we have succeeded in changing individuals from what they were like upon entering college. The final state, the quality of our products at the end, may very well depend more on what students were like at the beginning than on what the college does for them. If we are concerned primarily with the final state, probably the safest course is to recruit individuals in the beginning who are already like the people that we want to have at the end. Efforts to predict success in college by means of high school averages, SAT scores and the like, ususally assume that students don't change and that the college does not influence them. If the students changed a lot, and if factors in the college environment were very influential, then correlations between tests given before college and tests given at the end of college would not be very high. It is rather sad, I think, that our testing movement in higher education bets heavily on the proposition that the final state of the graduate will depend most heavily on factors that were present in him long before he ever went to college. In fact, the testers describe factors in the college environment as contingency factors;

that is, factors which upset the test's prediction that final success, or the success of a college, will depend upon factors indicated in tests given during high school.

If we are interested in predicting change, this is something much more difficult. Is the college effective in changing people, or do all young people change willy-nilly? Actually, when we report our work at Vassar, describing kinds of changes in various factors of personality that occur during the four years of college, the first question that we always get is, "Did you give these tests to people who didn't go to college? Did you give them once and then four years later to people who didn't go to college?"

There is a strong and persistent belief -- among psychologists at least -- that college doesn't really have any effect on personality, and that if you get changes in this area, it must be because this is simply the way people develop. Well, I think we don't have to be altogether overwhelmed by this line of criticism because we know now that in different colleges, of quite different kinds, different degrees of change in respect to these qualities of personality occur and this in fairly predictable ways. If we are interested in predicting change, in understanding change in college, we have to know a lot about the entering student; we have to know a lot about influential factors in the college environment, and we have to have theory that relates to these two kinds of factors.

As I have suggested, most colleges in America want to up-grade themselves in the academic world, and they mainly hope to do this by recruiting "brighter" students. This will permit them to raise standards, to recruit better -- or more noted or notorious -- faculty, and have academic glamour. If we were to compare this practice to psychotherapy, it would be like the psychotherapist who undertakes to gain and maintain a good reputation for himself by making sure that all the patients he takes are curable and not troublesome, and, of course, affluent. He would leave the difficult problems, the troublesome, unpromising and impecunious patients to the beginners. Something like this goes on in our colleges as they up-grade themselves, and some colleges are still in the throes of deciding what they shall do. I know, for example, of a small college in the West that is very favorably located, has a good faculty, beautiful location, money, and good buildings. The college is now asking itself very seriouly whether to go the usual way, making itself known recruiting nationally, becoming a kind of national institution, or whether to devote its efforts to doing the best it can for the local young people who come there to be educated. The same issue confronts some of the great state universities who now are asking themselves whether they can continue to get more and more government money and become national research organizations, without neglecting the educational needs of the people in their states.

I would like to uphold as the major criterion of educational success the degree to which students are changed in desired ways. If a college admits students who are full of prejudices, have primitive tastes and shallow, transitory interests, and a set of values that have not been modified since they were uncritically and automatically accepted in childhood, and who are rigid and stereotyped in their thinking; and, if after four years, the college turns out students who are broad and open to the world, have deep interests, and values that now reflect their own criticism and best thought, who are sharp and flexible in their thinking and at the same time imaginative, curious, and capable of self expression, and who now have good taste and are sensitive and discriminating with respect to the manifold aspects of our culture, then this college is successful as an institution of learning. I would say it was successful even though none of its teachers was ever heard of outside of its own locality, and even though the absolute level of accomplishment of its students at the time of graduation was not as high as the absolute level found in other better known institutions. If we look at it this way, then we can say that any college can be a success. We can also say, of course, that few colleges have so far demonstrated that they are successful in this important sense.

Colleges that succeed in inducing the kinds of change just described may be said to have furthered the development of their students as total personalities. And this, I should say, is the central aim of a liberal arts education. Education for individual development can be defended as an end in itself; as the instrument through which other aims of education are to be realized; and as a requirement of life in the modern world.

To speak of individual development as an end in itself is to invite the rejoinder of the Polish reviewer of The American College: that the aim of education is rather to produce people who can contribute to society. What I am saying is that the state exists for the individual, not the individual for the state and that where a choice has to be made we should put the individual first. We should take Athens rather than Sparta as the ideal.

At the same time, however, I am arguing that it is the developed individual who can contribute the most to society. The needs and demands of society are almost always expressed in the form of requirements that the individual perform in certain social roles. Analysis will show, I believe, that good performance in these roles will depend more upon qualities found in highly developed individuals than upon particular skills or bits of knowledge.

Finally, if we look at the changing world of today it becomes apparent that it is only the well developed individual who can both perform well and be truly human. It is not only that vocational requirements change faster than people can be trained to meet them, but social role requirements change and multiply in an increasingly complex world. To flourish in this world the individual must have developed the intellectual powers of discriminating, criticizing, analyzing, synthesizing; he must have mastered the symbols of our culture that enable him to substitute brains for brawn; he must have what psychologists call "role flexibility" -- the capacity to take one role well and then switch quickly to another without being totally taken up by either; he must be capable of responding with sensitivity and taste to manifold aspects of his physical, social, and cultural environments; he must have enough self-awareness, or be sufficiently at home with the more primitive and emotional aspects of himself so that nothing human is alien to him and, hence, so that he is capable of being a citizen of the world; and he must have enough self-structure so that he can remain more or less unified while doing all these different kinds of things and while changing enough to meet new situations.

All these attributes of a person are related one to another; the development of one depends on development of the others. How then are we to measure developmental change? We have to abstract particular qualities from the whole, define them and measure them as best we can. We have to apply our measures at the time of entrance and again at the time of leaving, with due attention to all the kinds of controls necessary in order to demonstrate that observed developmental changes were actually due to something the institution did.

The measures that are best developed are those that by the present argument are least important, that is, measures of particular skills and knowledge. Such measures are not to be despised, since they may indicate that change is taking place. But we are mainly interested in what remains of an education after the content of courses has been forgotten. I should say that what remains has become integral with the rest of the personality. We here think first of those intellectual powers mentioned above. Some measures in this area are available; for example, those produced by Dressel and Mayhew. Others are needed. But I have spoken of more general qualities, and this, of course, is where our work at Vassar comes in. We have stated, for example, that Vassar seniors are less stereotyped in their thinking, less conformist, less prejudiced, more open to experience, possessed of more firmly internalized values, more sophisticated and enlightened in their views of the world, and more capable of expressing their deeper feelings than they were as freshmen. We said all this more succinctly but less understandably in reporting that seniors were lower on "authoritarianism" and higher on "impulse expression" than freshmen.

Here we have encountered some difficulties -- which have been, in large part, of our own making. When we speak of "measures" of authoritarianism or impulse expression and of changes in these "variables of personality," it must sound to many educators as if these were manifest traits of the same order as say, "criticalness of thinking," and that we were interested in developing certain personality characteristics in contra-distinction to, and perhaps at the expense of, intellectual powers. Nothing, of course, could be farther from the truth; but I think we have failed in communication by not making it clear that the major terms of our personality theories are not observable traits -- which one may like or dislike -- but rather constructs to stand for hypothetical processes and structures inside the personality and behind overt behavior. Authoritarianism -- like impulse expression -- is such a construct. We, in a manner of speaking, say we measure it because we measure a number of things, mostly patterns of verbal behavior, that on theoretical grounds we believe to be manifestations of it. But to regard authoritarianism merely as another trait is to lose its explanatory power -- the last thing that a personality theorist would want to lose. The point is that all performances of students, including criticalness of thinking and all other cognitive activities are to be explained in part on the basis of theory about what is going on inside the personality. Hence the absurdity of setting up some kind of opposition between "intellectual characteristics" and the processes of personality.

Yet, the difficulties of communication remain. As students of personality we have the obligation to produce theory, the means by which our knowledge may be made systematic. If we are to get beyond common sense and and intuition we have to bring specific observations systematically together within the same conceptual framework. This permits us to assess similarities and differences on higher levels of abstraction, and to look for interrelationships that are not open to everyday observation; it also guides our search for underlying determinants, offering a basis for judging whether an unexpected finding is a result of fairly unique circumstances or an indication of a more fundamental relationship which it may help to clarify. Thus we have a right to, as well as a necessity for, our special terms and our special techniques of investigation. But we do not have to burden all educators with them. I should be content if all educational desiderata were thought of as abilities, and if these were called by familiar names. Naturally, however, I should like to see attention given to many kinds of ability in addition to those that favor good marks on examinations and intelligence tests. In addition to creativity in various spheres, artistic abilities of all kinds, and non-verbal abilities we should concern ourselves with leadership ability, ability to take various social roles, ability to see ourselves as others see us, ability to make value judgments, and so on. If there were objective measures of all these things there would be no difficulty about inferring authoritarianism, or its opposite, from the pattern of test scores. Or, to take it the other way around, if we had a good grip on an individual's authoritarianism we could go quite a long way toward predicting his scores on some of these tests. But most important, of course, it is knowledge of authoritarianism, and of other complex structures of the personality, that suggests what we might do to bring out change -- in the structures themselves and in the various abilities that largely rest upon them.

Those of us who specialize in the psychology of personality will, of course, continue to study the conditions and processes of change in the central structures of personality. It is up to specialists in educational testing to develop instruments for measuring various kinds of abilities. And I would like to see them get on it. The measurement of change in such abilities as those mentioned above offers a fair test of what a small college can do or of what a new college can do. I think also that measures of change, when they have been adequately developed, can supply the basis for a different but very professional approach in higher education. The professional educator who adopts this approach, instead of bragging about how many bright students his college is recruiting right now, will talk about how many interesting and challenging educational problems confront his college and about what he and his colleagues are doing to solve them.

APPENDIX

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